

aat cat cag agt tct ctc gac att cta tcg atg gca tca atc tgg ccg	336
Asn His Gln Ser Ser Leu Asp Ile Leu Ser Met Ala Ser Ile Trp Pro	
100 105 110	
aag aat tgt gtt gta atg atg aaa cga att ctt gcc tat gtt cca ttc	384
Lys Asn Cys Val Val Met Met Lys Arg Ile Leu Ala Tyr Val Pro Phe	
115 120 125	
ttc aat ctc gga gcc tac ttt tcc aac aca atc ttc atc gat cga tat	432
Phe Asn Leu Gly Ala Tyr Phe Ser Asn Thr Ile Phe Ile Asp Arg Tyr	
130 135 140	
aac cgt gaa cgt gcg atg gct tca gtt gat tat tgt gca tct gaa atg	480
Asn Arg Glu Arg Ala Met Ala Ser Val Asp Tyr Cys Ala Ser Glu Met	
145 150 155 160	
aag aac aga aat ctt aaa ctt tgg gta ttt ccg gaa gga aca aga aat	528
Lys Asn Arg Asn Leu Lys Leu Trp Val Phe Pro Glu Gly Thr Arg Asn	
165 170 175	
cgt gaa gga ggg ttc att cca ttc aag aaa gga gca ttc aat att gca	576
Arg Glu Gly Phe Ile Pro Phe Lys Lys Gly Ala Phe Asn Ile Ala	
180 185 190	
gtt cgt gcg cag att ccc att att cca gtt gta ttc tca gac tat cgg	624
Val Arg Ala Gln Ile Pro Ile Ile Pro Val Val Phe Ser Asp Tyr Arg	
195 200 205	
gat ttc tac tca aag cca ggc cga tat ttc aag aat gat gga gaa gtt	672
Asp Phe Tyr Ser Lys Pro Gly Arg Tyr Phe Lys Asn Asp Gly Glu Val	
210 215 220	
gtt att cga gtt ctg gat gcg att cca aca aaa ggg ctc act ctt gat	720
Val Ile Arg Val Leu Asp Ala Ile Pro Thr Lys Gly Leu Thr Leu Asp	
225 230 235 240	
gac gtc agc gag ttg tct gat atg tgt cgg gac gtt atg ttg gca gcc	768
Asp Val Ser Glu Leu Ser Asp Met Cys Arg Asp Val Met Leu Ala Ala	
245 250 255	
tat aag gaa gtt act cta gaa gct cag caa cga aat gcg aca cgg cgt	816
Tyr Lys Glu Val Thr Leu Glu Ala Gln Gln Arg Asn Ala Thr Arg Arg	
260 265 270	
gga gaa aca aaa gac ggg aag aaa tct gag taa	849
Gly Glu Thr Lys Asp Gly Lys Lys Ser Glu	
275 280	
<210> 2	
<211> 282	
<212> PRT	
<213> <i>Caenorhabditis elegans</i>	
<400> 2	

Met Glu Asn Phe Trp Ser Ile Val Val Phe Phe Leu Leu Ser Ile Leu
1 5 10 15

Phe Ile Leu Tyr Asn Ile Ser Thr Val Cys His Tyr Tyr Met Arg Ile
20 25 30

Ser Phe Tyr Tyr Phe Thr Ile Leu Leu His Gly Met Glu Val Cys Val
35 40 45

Thr Met Ile Pro Ser Trp Leu Asn Gly Lys Gly Ala Asp Tyr Val Phe
50 55 60

His Ser Phe Phe Tyr Trp Cys Lys Trp Thr Gly Val His Thr Thr Val
65 70 75 80

Tyr Gly Tyr Glu Lys Thr Gln Val Glu Gly Pro Ala Val Val Ile Cys
85 90 95

Asn His Gln Ser Ser Leu Asp Ile Leu Ser Met Ala Ser Ile Trp Pro
100 105 110

Lys Asn Cys Val Val Met Met Lys Arg Ile Leu Ala Tyr Val Pro Phe
115 120 125

Phe Asn Leu Gly Ala Tyr Phe Ser Asn Thr Ile Phe Ile Asp Arg Tyr
130 135 140

Asn Arg Glu Arg Ala Met Ala Ser Val Asp Tyr Cys Ala Ser Glu Met
145 150 155 160

Lys Asn Arg Asn Leu Lys Leu Trp Val Phe Pro Glu Gly Thr Arg Asn
165 170 175

Arg Glu Gly Gly Phe Ile Pro Phe Lys Lys Gly Ala Phe Asn Ile Ala
180 185 190

Val Arg Ala Gln Ile Pro Ile Ile Pro Val Val Phe Ser Asp Tyr Arg
195 200 205

Asp Phe Tyr Ser Lys Pro Gly Arg Tyr Phe Lys Asn Asp Gly Glu Val
210 215 220

Val	Ile	Arg	Val	Leu	Asp	Ala	Ile	Pro	Thr	Lys	Gly	Leu	Thr	Leu	Asp
225				230						235					240

Tyr Lys Glu Val Thr Leu Glu Ala Gln Gln Arg Asn Ala Thr Arg Arg
260 265 270

Gly Glu Thr Lys Asp Gly Lys Lys Ser Glu
275 280

<210> 3
<211> 849
<212> DNA
<213> *Caenorhabditis elegans*

<220>
<221> CDS
<222> (1)..(849)
<223> Acyl-CoA:lysophospholipid acyltransferase

<400> 3
atg gag aac ttc tgg tcg atc gtc gtg ttt ttt cta ctc tca att ctc
Met Glu Asn Phe Trp Ser Ile Val Val Phe Phe Leu Leu Ser Ile Leu
1 5 10 15

```

aca atg atc cct tct tgg cta aat ggg aag ggt gct gat tac gtg ttt      192
Thr Met Ile Pro Ser Trp Leu Asn Gly Lys Gly Ala Asp Tyr Val Phe
      50          55          60

```

cac tcg ttt ttc tat tgg tgt aaa tgg act ggt gtt cat aca aca gtc	240
His Ser Phe Phe Tyr Trp Cys Lys Trp Thr Gly Val His Thr Thr Val	
65 70 75 80	

tat gga tat gaa aaa aca caa gtt gaa ggt ccg gct gta gtt att tgt 288
 Tyr Gly Tyr Glu Lys Thr Gln Val Glu Gly Pro Ala Val Val Ile Cys
 85 90 95

```

aat cat cag agt tct ctc gac att cta tcg atg gca tca atc tgg ccg      336
Asn His Gln Ser Ser Leu Asp Ile Leu Ser Met Ala Ser Ile Trp Pro
          100          105          110

```

aag aat tgt gtt gta atg atg aaa cga att ctt gcc tat gtt cca ttc 384

Lys Asn Cys Val Val Met Met Lys Arg Ile Leu Ala Tyr Val Pro Phe			
115	120	125	
ttc aat ctc gga gcc tac ttt tcc aac aca atc ttc atc gat cga tat			432
Phe Asn Leu Gly Ala Tyr Phe Ser Asn Thr Ile Phe Ile Asp Arg Tyr			
130	135	140	
aac cgt gaa cgt gcg atg gct tca gtt gat tat tgt gca tct gaa atg			480
Asn Arg Glu Arg Ala Met Ala Ser Val Asp Tyr Cys Ala Ser Glu Met			
145	150	155	160
aag aac aga aat ctt aaa ctt tgg gta tct ccg gaa gga aca aga aat			528
Lys Asn Arg Asn Leu Lys Leu Trp Val Ser Pro Glu Gly Thr Arg Asn			
165	170	175	
cgt gaa gga ggg ttc att cca ttc aag aaa gga gca ttc aat att gca			576
Arg Glu Gly Gly Phe Ile Pro Phe Lys Lys Gly Ala Phe Asn Ile Ala			
180	185	190	
gtt cgt gcg cag att ccc att att cca gtt gta ttc tca gac tat cgg			624
Val Arg Ala Gln Ile Pro Ile Ile Pro Val Val Phe Ser Asp Tyr Arg			
195	200	205	
gat ttc tac tca aag cca ggc cga tat ttc aag aat gat gga gaa gtt			672
Asp Phe Tyr Ser Lys Pro Gly Arg Tyr Phe Lys Asn Asp Gly Glu Val			
210	215	220	
gtt att cga gtt ctg gat gcg att cca aca aaa ggg ctc act ctt gat			720
Val Ile Arg Val Leu Asp Ala Ile Pro Thr Lys Gly Leu Thr Leu Asp			
225	230	235	240
gac gtc agc gag ttg tct gat atg tgt cgg gac gtt atg ttg gca gcc			768
Asp Val Ser Glu Leu Ser Asp Met Cys Arg Asp Val Met Leu Ala Ala			
245	250	255	
tat aag gaa gtt act cta gaa gct cag caa cga aat gcg aca cgg cgt			816
Tyr Lys Glu Val Thr Leu Glu Ala Gln Gln Arg Asn Ala Thr Arg Arg			
260	265	270	
gga gaa aca aaa gac ggg aag aaa tct gag taa			849
Gly Glu Thr Lys Asp Gly Lys Lys Ser Glu			
275	280		

<210> 4
 <211> 282
 <212> PRT
 <213> *Caenorhabditis elegans*

<400> 4

Met Glu Asn Phe Trp Ser Ile Val Val Phe Phe Leu Leu Ser Ile Leu			
1	5	10	15

Phe Ile Leu Tyr Asn Ile Ser Thr Val Cys His Tyr Tyr Met Arg Ile			
20	25	30	

Ser Phe Tyr Tyr Phe Thr Ile Leu Leu His Gly Met Glu Val Cys Val
35 40 45

Thr Met Ile Pro Ser Trp Leu Asn Gly Lys Gly Ala Asp Tyr Val Phe
50 55 60

His Ser Phe Phe Tyr Trp Cys Lys Trp Thr Gly Val His Thr Thr Val
65 70 75 80

Tyr Gly Tyr Glu Lys Thr Gln Val Glu Gly Pro Ala Val Val Ile Cys
85 90 95

Asn His Gln Ser Ser Leu Asp Ile Leu Ser Met Ala Ser Ile Trp Pro
100 105 110

Lys Asn Cys Val Val Met Met Lys Arg Ile Leu Ala Tyr Val Pro Phe
115 120 125

Phe Asn Leu Gly Ala Tyr Phe Ser Asn Thr Ile Phe Ile Asp Arg Tyr
130 135 140

Asn Arg Glu Arg Ala Met Ala Ser Val Asp Tyr Cys Ala Ser Glu Met
145 150 155 160

Lys Asn Arg Asn Leu Lys Leu Trp Val Ser Pro Glu Gly Thr Arg Asn
165 170 175

Arg Glu Gly Gly Phe Ile Pro Phe Lys Lys Gly Ala Phe Asn Ile Ala
180 185 190

Val Arg Ala Gln Ile Pro Ile Ile Pro Val Val Phe Ser Asp Tyr Arg
195 200 205

Asp Phe Tyr Ser Lys Pro Gly Arg Tyr Phe Lys Asn Asp Gly Glu Val
210 215 220

Val Ile Arg Val Leu Asp Ala Ile Pro Thr Lys Gly Leu Thr Leu Asp
225 230 235 240

Asp Val Ser Glu Leu Ser Asp Met Cys Arg Asp Val Met Leu Ala Ala
245 250 255

Tyr Lys Glu Val Thr Leu Glu Ala Gln Gln Arg Asn Ala Thr Arg Arg
260 265 270

Gly Glu Thr Lys Asp Gly Lys Lys Ser Glu
275 280

<210> 5
<211> 849
<212> DNA
<213> *Caenorhabditis elegans*

<220>
<221> CDS
<222> (1)..(849)
<223> Acyl-CoA:lysophospholipid acyltransferase

```

<400> 5
atg gag aac ttc tgg tcg atc gtc gtg ttt ttt cta ctc tca att ctc 48
Met Glu Asn Phe Trp Ser Ile Val Val Phe Phe Leu Leu Ser Ile Leu
1           5           10           15

```

ttc att tta tat aac ata tcg aca gta tgc cac tac tat gtg cg^g att
 Phe Ile Leu Tyr Asn Ile Ser Thr Val Cys His Tyr Tyr Val Arg Ile
 20 25 30

tcg ttt tat tac ttc aca att tta ttg cat gga atg gaa gtt tgt gtt 144
 Ser Phe Tyr Tyr Phe Thr Ile Leu Leu His Gly Met Glu Val Cys Val
 35 40 45

```

aca atg atc cct tct tgg cta aat ggg aag ggt gct gat tac gtg ttt      192
Thr Met Ile Pro Ser Trp Leu Asn Gly Lys Gly Ala Asp Tyr Val Phe
50          55          .          60

```

```

cac tcg ttt ttc tat tgg tgt aaa tgg act ggt gtt cat aca aca gtc 240
His Ser Phe Phe Tyr Trp Cys Lys Trp Thr Gly Val His Thr Thr Val
65          70          75          80

```

tat gga tat gaa aaa aca caa gtt gaa ggt ccg gct gta gtt att tgt 288
 Tyr Gly Tyr Glu Lys Thr Gln Val Glu Gly Pro Ala Val Val Ile Cys
 85 90 95

```

aat cat cag agt tct ctc gac att cta tcg atg gca tca atc tgg ccg 336
Asn His Gln Ser Ser Leu Asp Ile Leu Ser Met Ala Ser Ile Trp Pro
100          105          110

```

```

aag aat tgt gtt gta atg atg aaa cga att ctt gcc tat gtt cca ttc      384
Lys Asn Cys Val Val Met Met Lys Arg Ile Leu Ala Tyr Val Pro Phe
115          120          125

```

ttc aat ctc gga gcc tac ttt tcc aac aca atc ttc atc gat cga tat 432
 Phe Asn Leu Gly Ala Tyr Phe Ser Asn Thr Ile Phe Ile Asp Arg Tyr
 130 135 140

aac cgt gaa cgt gcg atg gct tca gtt gat tat tgt gca tct gaa atg	480
Asn Arg Glu Arg Ala Met Ala Ser Val Asp Tyr Cys Ala Ser Glu Met	
145 150 155 160	
aag aac aga aat ctt aaa ctt tgg gta ttt ccg gaa gga aca aga aat	528
Lys Asn Arg Asn Leu Lys Leu Trp Val Phe Pro Glu Gly Thr Arg Asn	
165 170 175	
cgt gaa gga ggg ttc att cca ttc aag aaa gga gca ttc aat att gca	576
Arg Glu Gly Gly Phe Ile Pro Phe Lys Lys Gly Ala Phe Asn Ile Ala	
180 185 190	
gtt cgt gcg cag att ccc att att cca gtt gta ttc tca gac tat cgg	624
Val Arg Ala Gln Ile Pro Ile Ile Pro Val Val Phe Ser Asp Tyr Arg	
195 200 205	
gat ttc tac tca aag cca ggc cga tat ttc aag aat gat gga gaa gtt	672
Asp Phe Tyr Ser Lys Pro Gly Arg Tyr Phe Lys Asn Asp Gly Glu Val	
210 215 220	
gtt att cga gtt ctg gat gcg att cca aca aaa ggg ctc act ctt gat	720
Val Ile Arg Val Leu Asp Ala Ile Pro Thr Lys Gly Leu Thr Leu Asp	
225 230 235 240	
gac gtc agc gag ttg tct gat atg tgt cgg gac gtt atg ttg gca gcc	768
Asp Val Ser Glu Leu Ser Asp Met Cys Arg Asp Val Met Leu Ala Ala	
245 250 255	
tat aag gaa gtt act cta gaa gct cag caa cga aat gcg aca cgg cgt	816
Tyr Lys Glu Val Thr Leu Glu Ala Gln Gln Arg Asn Ala Thr Arg Arg	
260 265 270	
gga gaa aca aaa gac ggg aag aaa tct gag taa	849
Gly Glu Thr Lys Asp Gly Lys Ser Glu	
275 280	

<210> 6
 <211> 282
 <212> PRT
 <213> *Caenorhabditis elegans*

<400> 6

Met Glu Asn Phe Trp Ser Ile Val Val Phe Phe Leu Leu Ser Ile Leu	
1 5 10 15	

Phe Ile Leu Tyr Asn Ile Ser Thr Val Cys His Tyr Tyr Val Arg Ile	
20 25 30	

Ser Phe Tyr Tyr Phe Thr Ile Leu Leu His Gly Met Glu Val Cys Val	
35 40 45	

Thr Met Ile Pro Ser Trp Leu Asn Gly Lys Gly Ala Asp Tyr Val Phe

50

55

60

His Ser Phe Phe Tyr Trp Cys Lys Trp Thr Gly Val His Thr Thr Val
65 70 75 80

Tyr Gly Tyr Glu Lys Thr Gln Val Glu Gly Pro Ala Val Val Ile Cys
85 90 95

Asn His Gln Ser Ser Leu Asp Ile Leu Ser Met Ala Ser Ile Trp Pro
100 105 110

Lys Asn Cys Val Val Met Met Lys Arg Ile Leu Ala Tyr Val Pro Phe
115 120 125

Phe Asn Leu Gly Ala Tyr Phe Ser Asn Thr Ile Phe Ile Asp Arg Tyr
130 135 140

Asn Arg Glu Arg Ala Met Ala Ser Val Asp Tyr Cys Ala Ser Glu Met
145 150 155 160

Lys Asn Arg Asn Leu Lys Leu Trp Val Phe Pro Glu Gly Thr Arg Asn
165 170 175

Arg Glu Gly Gly Phe Ile Pro Phe Lys Lys Gly Ala Phe Asn Ile Ala
180 185 190

Val Arg Ala Gln Ile Pro Ile Ile Pro Val Val Phe Ser Asp Tyr Arg
195 200 205

Asp Phe Tyr Ser Lys Pro Gly Arg Tyr Phe Lys Asn Asp Gly Glu Val
210 215 220

Val Ile Arg Val Leu Asp Ala Ile Pro Thr Lys Gly Leu Thr Leu Asp
225 230 235 240

Asp Val Ser Glu Leu Ser Asp Met Cys Arg Asp Val Met Leu Ala Ala
245 250 255

Tyr Lys Glu Val Thr Leu Glu Ala Gln Gln Arg Asn Ala Thr Arg Arg
260 265 270

Gly Glu Thr Lys Asp Gly Lys Lys Ser Glu
275 280

<210> 7
 <211> 849
 <212> DNA
 <213> *Caenorhabditis elegans*

 <220>
 <221> CDS
 <222> (1)..(849)
 <223> Acyl-CoA:lysophospholipid acyltransferase

 <400> 7 48
 atg gag aac ttc tgg tcg atc gtc gtg ttt ttt cta ctc tca att ctc
 Met Glu Asn Phe Trp Ser Ile Val Val Phe Phe Leu Leu Ser Ile Leu
 1 5 10 15

 ttc att tta tat aac ata tcg aca gta tgc cac tac tat atg cg att 96
 Phe Ile Leu Tyr Asn Ile Ser Thr Val Cys His Tyr Tyr Met Arg Ile
 20 25 30

 tcg ttt tat tac ttc aca att tta ttg cat gga atg gaa gtt tgt gtt 144
 Ser Phe Tyr Tyr Phe Thr Ile Leu Leu His Gly Met Glu Val Cys Val
 35 40 45

 aca atg atc cct tct tgg cta aat ggg aag ggt gct gat tac gtg ttt 192
 Thr Met Ile Pro Ser Trp Leu Asn Gly Lys Gly Ala Asp Tyr Val Phe
 50 55 60

 cac tcg ttt ttc tat tgg tgt aaa tgg act ggt gtt cat aca aca gtc 240
 His Ser Phe Phe Tyr Trp Cys Lys Trp Thr Gly Val His Thr Thr Val
 65 70 75 80

 tat gga tat gaa aaa aca caa gtt gaa ggt ccg gcc gta gtt att tgt 288
 Tyr Gly Tyr Glu Lys Thr Gln Val Glu Gly Pro Ala Val Val Ile Cys
 85 90 95

 aat cat cag ggt tct ctc gac att cta tcg atg gca tca atc tgg ccg 336
 Asn His Gln Gly Ser Leu Asp Ile Leu Ser Met Ala Ser Ile Trp Pro
 100 105 110

 aag aat tgt gtt gta atg atg aaa cga att ctt gcc tat gtt cca ttc 384
 Lys Asn Cys Val Val Met Met Lys Arg Ile Leu Ala Tyr Val Pro Phe
 115 120 125

 ttc aat ctc gga gcc tac ttt tcc aac aca atc ttc atc gat cga tat 432
 Phe Asn Leu Gly Ala Tyr Phe Ser Asn Thr Ile Phe Ile Asp Arg Tyr
 130 135 140

 aac cgt gaa cgt gcg atg gct tca gtt gat tat tgt gca tct gaa atg 480
 Asn Arg Glu Arg Ala Met Ala Ser Val Asp Tyr Cys Ala Ser Glu Met
 145 150 155 160

 aag aac aga aat ctt aaa ctt tgg gta ttt ccg gaa gga aca aga aat 528
 Lys Asn Arg Asn Leu Lys Leu Trp Val Phe Pro Glu Gly Thr Arg Asn
 165 170 175

cgt gaa gga ggg ttc att cca ttc aag aaa gga gca ttc aat att gca 576
 Arg Glu Gly Gly Phe Ile Pro Phe Lys Lys Gly Ala Phe Asn Ile Ala
 180 185 190

gtt cgt gcg cag att ccc att att cca gtt gta ttc tca gac tat cg 624
 Val Arg Ala Gln Ile Pro Ile Ile Pro Val Val Phe Ser Asp Tyr Arg
 195 200 205

gat ttc tac tca aag cca ggc cga tat ttc aag aat gat gga gaa gtt 672
 Asp Phe Tyr Ser Lys Pro Gly Arg Tyr Phe Lys Asn Asp Gly Glu Val
 210 215 220

gtt att cga gtt ctg gat gcg att cca aca aaa ggg ctc act ctt gat 720
 Val Ile Arg Val Leu Asp Ala Ile Pro Thr Lys Gly Leu Thr Leu Asp
 225 230 235 240

gac gtc agc gag ttg tct gat atg tgt cg gac gtt atg ttg gca gcc 768
 Asp Val Ser Glu Leu Ser Asp Met Cys Arg Asp Val Met Leu Ala Ala
 245 250 255

tat aag gaa gtt act cta gaa gct cag caa cga aat gcg aca cg gct 816
 Tyr Lys Glu Val Thr Leu Glu Ala Gln Gln Arg Asn Ala Thr Arg Arg
 260 265 270

gga gaa aca aaa gac ggg aag aaa tct gag taa 849
 Gly Glu Thr Lys Asp Gly Lys Lys Ser Glu
 275 280

<210> 8

<211> 282

<212> PRT

<213> *Caenorhabditis elegans*

<400> 8

Met Glu Asn Phe Trp Ser Ile Val Val Phe Phe Leu Leu Ser Ile Leu
 1 5 10 15

Phe Ile Leu Tyr Asn Ile Ser Thr Val Cys His Tyr Tyr Met Arg Ile
 20 25 30

Ser Phe Tyr Tyr Phe Thr Ile Leu Leu His Gly Met Glu Val Cys Val
 35 40 45

Thr Met Ile Pro Ser Trp Leu Asn Gly Lys Gly Ala Asp Tyr Val Phe
 50 55 60

His Ser Phe Phe Tyr Trp Cys Lys Trp Thr Gly Val His Thr Thr Val
 65 70 75 80

Tyr Gly Tyr Glu Lys Thr Gln Val Glu Gly Pro Ala Val Val Ile Cys
 85 90 95

Asn His Gln Gly Ser Leu Asp Ile Leu Ser Met Ala Ser Ile Trp Pro
 100 105 110

Lys Asn Cys Val Val Met Met Lys Arg Ile Leu Ala Tyr Val Pro Phe
 115 120 125

Phe Asn Leu Gly Ala Tyr Phe Ser Asn Thr Ile Phe Ile Asp Arg Tyr
 130 135 140

Asn Arg Glu Arg Ala Met Ala Ser Val Asp Tyr Cys Ala Ser Glu Met
 145 150 155 160

Lys Asn Arg Asn Leu Lys Leu Trp Val Phe Pro Glu Gly Thr Arg Asn
 165 170 175

Arg Glu Gly Gly Phe Ile Pro Phe Lys Lys Gly Ala Phe Asn Ile Ala
 180 185 190

Val Arg Ala Gln Ile Pro Ile Ile Pro Val Val Phe Ser Asp Tyr Arg
 195 200 205

Asp Phe Tyr Ser Lys Pro Gly Arg Tyr Phe Lys Asn Asp Gly Glu Val
 210 215 220

Val Ile Arg Val Leu Asp Ala Ile Pro Thr Lys Gly Leu Thr Leu Asp
 225 230 235 240

Asp Val Ser Glu Leu Ser Asp Met Cys Arg Asp Val Met Leu Ala Ala
 245 250 255

Tyr Lys Glu Val Thr Leu Glu Ala Gln Gln Arg Asn Ala Thr Arg Arg
 260 265 270

Gly Glu Thr Lys Asp Gly Lys Lys Ser Glu
 275 280

<210> 9

<211> 1578

<212> DNA

<213> *Physcomitrella patens*

<220>
<221> CDS
<222> (1)..(1578)
<223> Delta-6-desaturase

<400> 9				48
atg gta ttc gcg ggc ggt gga ctt cag cag ggc tct ctc gaa gaa aac				
Met Val Phe Ala Gly Gly Gly Leu Gln Gln Gly Ser Leu Glu Glu Asn				
1 5 10 15				
atc gac gtc gag cac att gcc agt atg tct ctc ttc agc gac ttc ttc				96
Ile Asp Val Glu His Ile Ala Ser Met Ser Leu Phe Ser Asp Phe Phe				
20 25 30				
agt tat gtg tct tca act gtt ggt tcg tgg agc gta cac agt ata caa				144
Ser Tyr Val Ser Ser Thr Val Gly Ser Trp Ser Val His Ser Ile Gln				
35 40 45				
cct ttg aag cgc ctg acg agt aag aag cgt gtt tcg gaa agc gct gcc				192
Pro Leu Lys Arg Leu Thr Ser Lys Lys Arg Val Ser Glu Ser Ala Ala				
50 55 60				
gtg caa tgt ata tca gct gaa gtt cag aga aat tcg agt acc cag gga				240
Val Gln Cys Ile Ser Ala Glu Val Gln Arg Asn Ser Ser Thr Gln Gly				
65 70 75 80				
act gcg gag gca ctc gca gaa tca gtc gtg aag ccc acg aga cga agg				288
Thr Ala Glu Ala Leu Ala Glu Ser Val Val Lys Pro Thr Arg Arg Arg				
85 90 95				
tca tct cag tgg aag aag tcg aca cac ccc cta tca gaa gta gca gta				336
Ser Ser Gln Trp Lys Lys Ser Thr His Pro Leu Ser Glu Val Ala Val				
100 105 110				
cac aac aag cca agc gat tgc tgg att gtt gta aaa aac aag gtg tat				384
His Asn Lys Pro Ser Asp Cys Trp Ile Val Val Lys Asn Lys Val Tyr				
115 120 125				
gat gtt tcc aat ttt gcg gac gag cat ccc gga gga tca gtt att agt				432
Asp Val Ser Asn Phe Ala Asp Glu His Pro Gly Gly Ser Val Ile Ser				
130 135 140				
act tat ttt gga cga gac ggc aca gat gtt ttc tct agt ttt cat gca				480
Thr Tyr Phe Gly Arg Asp Gly Thr Asp Val Phe Ser Ser Phe His Ala				
145 150 155 160				
gct tct aca tgg aaa att ctt caa gac ttt tac att ggt gac gtg gag				528
Ala Ser Thr Trp Lys Ile Leu Gln Asp Phe Tyr Ile Gly Asp Val Glu				
165 170 175				
agg gtg gag ccg act cca gag ctg ctg aaa gat ttc cga gaa atg aga				576
Arg Val Glu Pro Thr Pro Glu Leu Leu Lys Asp Phe Arg Glu Met Arg				
180 185 190				
gct ctt ttc ctg agg gag caa ctt ttc aaa agt tcg aaa ttg tac tat				624

Ala Leu Phe Leu Arg Glu Gln Leu Phe Lys Ser Ser Lys Leu Tyr Tyr			
195	200	205	
gtt atg aag ctg ctc acg aat gtt gct att ttt gct gcg agc att gca			672
Val Met Lys Leu Leu Thr Asn Val Ala Ile Phe Ala Ala Ser Ile Ala			
210	215	220	
ata ata tgt tgg agc aag act att tca gcg gtt ttg gct tca gct tgt			720
Ile Ile Cys Trp Ser Lys Thr Ile Ser Ala Val Leu Ala Ser Ala Cys			
225	230	235	240
atg atg gct ctg tgt ttc caa cag tgc gga tgg cta tcc cat gat ttt			768
Met Met Ala Leu Cys Phe Gln Gln Cys Gly Trp Leu Ser His Asp Phe			
245	250	255	
ctc cac aat cag gtg ttt gag aca cgc tgg ctt aat gaa gtt gtc ggg			816
Leu His Asn Gln Val Phe Glu Thr Arg Trp Leu Asn Glu Val Val Gly			
260	265	270	
tat gtg atc ggc aac gcc gtt ctg ggg ttt agt aca ggg tgg tgg aag			864
Tyr Val Ile Gly Asn Ala Val Leu Gly Phe Ser Thr Gly Trp Trp Lys			
275	280	285	
gag aag cat aac ctt cat cat gct gct cca aat gaa tgc gat cag act			912
Glu Lys His Asn Leu His Ala Ala Pro Asn Glu Cys Asp Gln Thr			
290	295	300	
tac caa cca att gat gaa gat att gat act ctc ccc ctc att gcc tgg			960
Tyr Gln Pro Ile Asp Glu Asp Ile Asp Thr Leu Pro Leu Ile Ala Trp			
305	310	315	320
agc aag gac ata ctg gcc aca gtt gag aat aag aca ttc ttg cga atc			1008
Ser Lys Asp Ile Leu Ala Thr Val Glu Asn Lys Thr Phe Leu Arg Ile			
325	330	335	
ctc caa tac cag cat ctg ttc ttc atg ggt ctg tta ttt ttc gcc cgt			1056
Leu Gln Tyr Gln His Leu Phe Phe Met Gly Leu Leu Phe Phe Ala Arg			
340	345	350	
ggt agt tgg ctc ttt tgg agc tgg aga tat acc tct aca gca gtg ctc			1104
Gly Ser Trp Leu Phe Trp Ser Trp Arg Tyr Thr Ser Thr Ala Val Leu			
355	360	365	
tca cct gtc gac agg ttg ttg gag aag gg ^a act gtt ctg ttt cac tac			1152
Ser Pro Val Asp Arg Leu Leu Glu Lys Gly Thr Val Leu Phe His Tyr			
370	375	380	
ttt tgg ttc gtc ggg aca gcg tgc tat ctt ctc cct ggt tgg aag cca			1200
Phe Trp Phe Val Gly Thr Ala Cys Tyr Leu Leu Pro Gly Trp Lys Pro			
385	390	395	400
tta gta tgg atg gcg gtg act gag ctc atg tcc ggc atg ctg ctg ggc			1248
Leu Val Trp Met Ala Val Thr Glu Leu Met Ser Gly Met Leu Leu Gly			
405	410	415	
ttt gta ttt gta ctt agc cac aat ggg atg gag gtt tat aat tcg tct			1296
Phe Val Phe Val Leu Ser His Asn Gly Met Glu Val Tyr Asn Ser Ser			

420	425	430	
aaa gaa ttc gtg agt gca cag atc gta tcc aca cgg gat atc aaa gga Lys Glu Phe Val Ser Ala Gln Ile Val Ser Thr Arg Asp Ile Lys Gly 435	440	445	1344
aac ata ttc aac gac tgg ttc act ggt ggc ctt aac agg caa ata gag Asn Ile Phe Asn Asp Trp Phe Thr Gly Gly Leu Asn Arg Gln Ile Glu 450	455	460	1392
cat cat ctt ttc cca aca atg ccc agg cat aat tta aac aaa ata gca His His Leu Phe Pro Thr Met Pro Arg His Asn Leu Asn Lys Ile Ala 465	470	475	1440
cct aga gtg gag gtg ttc tgt aag aaa cac ggt ctg gtg tac gaa gac Pro Arg Val Glu Val Phe Cys Lys His Gly Leu Val Tyr Glu Asp 485	490	495	1488
gta tct att gct acc ggc act tgc aag gtt ttg aaa gca ttg aag gaa Val Ser Ile Ala Thr Gly Thr Cys Lys Val Leu Lys Ala Leu Lys Glu 500	505	510	1536
gtc gcg gag gct gca gag cag cat gct acc acc agt taa Val Ala Glu Ala Ala Glu Gln His Ala Thr Thr Ser 515	520	525	1578
<p><210> 10</p> <p><211> 525</p> <p><212> PRT</p> <p><213> <i>Physcomitrella patens</i></p>			
<p><400> 10</p> <p>Met Val Phe Ala Gly Gly Leu Gln Gln Gly Ser Leu Glu Glu Asn 1 5 10 15</p> <p>Ile Asp Val Glu His Ile Ala Ser Met Ser Leu Phe Ser Asp Phe Phe 20 25 30</p> <p>Ser Tyr Val Ser Ser Thr Val Gly Ser Trp Ser Val His Ser Ile Gln 35 40 45</p> <p>Pro Leu Lys Arg Leu Thr Ser Lys Lys Arg Val Ser Glu Ser Ala Ala 50 55 60</p> <p>Val Gln Cys Ile Ser Ala Glu Val Gln Arg Asn Ser Ser Thr Gln Gly 65 70 75 80</p> <p>Thr Ala Glu Ala Leu Ala Glu Ser Val Val Lys Pro Thr Arg Arg Arg 85 90 95</p>			

Ser Ser Gln Trp Lys Lys Ser Thr His Pro Leu Ser Glu Val Ala Val
 100 105 110

His Asn Lys Pro Ser Asp Cys Trp Ile Val Val Lys Asn Lys Val Tyr
 115 120 125

Asp Val Ser Asn Phe Ala Asp Glu His Pro Gly Gly Ser Val Ile Ser
 130 135 140

Thr Tyr Phe Gly Arg Asp Gly Thr Asp Val Phe Ser Ser Phe His Ala
 145 150 155 160

Ala Ser Thr Trp Lys Ile Leu Gln Asp Phe Tyr Ile Gly Asp Val Glu
 165 170 175

Arg Val Glu Pro Thr Pro Glu Leu Leu Lys Asp Phe Arg Glu Met Arg
 180 185 190

Ala Leu Phe Leu Arg Glu Gln Leu Phe Lys Ser Ser Lys Leu Tyr Tyr
 195 200 205

Val Met Lys Leu Leu Thr Asn Val Ala Ile Phe Ala Ala Ser Ile Ala
 210 215 220

Ile Ile Cys Trp Ser Lys Thr Ile Ser Ala Val Leu Ala Ser Ala Cys
 225 230 235 240

Met Met Ala Leu Cys Phe Gln Gln Cys Gly Trp Leu Ser His Asp Phe
 245 250 255

Leu His Asn Gln Val Phe Glu Thr Arg Trp Leu Asn Glu Val Val Gly
 260 265 270

Tyr Val Ile Gly Asn Ala Val Leu Gly Phe Ser Thr Gly Trp Trp Lys
 275 280 285

Glu Lys His Asn Leu His His Ala Ala Pro Asn Glu Cys Asp Gln Thr
 290 295 300

Tyr Gln Pro Ile Asp Glu Asp Ile Asp Thr Leu Pro Leu Ile Ala Trp
 305 310 315 320

Ser Lys Asp Ile Leu Ala Thr Val Glu Asn Lys Thr Phe Leu Arg Ile
 325 330 335

Leu Gln Tyr Gln His Leu Phe Phe Met Gly Leu Leu Phe Phe Ala Arg
 340 345 350

Gly Ser Trp Leu Phe Trp Ser Trp Arg Tyr Thr Ser Thr Ala Val Leu
 355 360 365

Ser Pro Val Asp Arg Leu Leu Glu Lys Gly Thr Val Leu Phe His Tyr
 370 375 380

Phe Trp Phe Val Gly Thr Ala Cys Tyr Leu Leu Pro Gly Trp Lys Pro
 385 390 395 400

Leu Val Trp Met Ala Val Thr Glu Leu Met Ser Gly Met Leu Leu Gly
 405 410 415

Phe Val Phe Val Leu Ser His Asn Gly Met Glu Val Tyr Asn Ser Ser
 420 425 430

Lys Glu Phe Val Ser Ala Gln Ile Val Ser Thr Arg Asp Ile Lys Gly
 435 440 445

Asn Ile Phe Asn Asp Trp Phe Thr Gly Gly Leu Asn Arg Gln Ile Glu
 450 455 460

His His Leu Phe Pro Thr Met Pro Arg His Asn Leu Asn Lys Ile Ala
 465 470 475 480

Pro Arg Val Glu Val Phe Cys Lys Lys His Gly Leu Val Tyr Glu Asp
 485 490 495

Val Ser Ile Ala Thr Gly Thr Cys Lys Val Leu Lys Ala Leu Lys Glu
 500 505 510

Val Ala Glu Ala Ala Ala Glu Gln His Ala Thr Thr Ser
 515 520 525

<210> 11

<211> i192

<212> DNA

<213> Physcomitrella patens

<220>
 <221> CDS
 <222> (58)..(930)
 <223> Delta-6-elongase

<400> 11	ctgcttcgtc tcatcttggg ggtgtgattc gggagtggtt tgagttgggt gagcgca	57
atg gag gtc gtg gag aga ttc tac ggt gag ttg gat ggg aag gtc tcg	Met Glu Val Val Glu Arg Phe Tyr Gly Glu Leu Asp Gly Lys Val Ser	105
1 5 10 15		
cag ggc gtg aat gca ttg ctg ggt agt ttt ggg gtg gag ttg acg gat	Gln Gly Val Asn Ala Leu Leu Gly Ser Phe Gly Val Glu Leu Thr Asp	153
20 25 30		
acg ccc act acc aaa ggc ttg ccc ctc gtt gac agt ccc aca ccc atc	Thr Pro Thr Thr Lys Gly Leu Pro Leu Val Asp Ser Pro Thr Pro Ile	201
35 40 45		
gtc ctc ggt gtt tct gta tac ttg act att gtc att gga ggg ctt ttg	Val Leu Gly Val Ser Val Tyr Leu Thr Ile Val Ile Gly Gly Leu Leu	249
50 55 60		
tgg ata aag gcc agg gat ctg aaa ccg ccg gcc tcg gag cca ttt ttg	Trp Ile Lys Ala Arg Asp Leu Lys Pro Arg Ala Ser Glu Pro Phe Leu	297
65 70 75 80		
ctc caa gct ttg gtg ctt gtg cac aac ctg ttc tgt ttt gcg ctc agt	Leu Gln Ala Leu Val Leu Val His Asn Leu Phe Cys Phe Ala Leu Ser	345
85 90 95		
ctg tat atg tgc gtg ggc atc gct tat cag gct att acc tgg cgg tac	Leu Tyr Met Cys Val Gly Ile Ala Tyr Gln Ala Ile Thr Trp Arg Tyr	393
100 105 110		
tct ctc tgg ggc aat gca tac aat cct aaa cat aaa gag atg gcg att	Ser Leu Trp Gly Asn Ala Tyr Asn Pro Lys His Lys Glu Met Ala Ile	441
115 120 125		
ctg gta tac ttg ttc tac atg tct aag tac gtg gaa ttc atg gat acc	Leu Val Tyr Leu Phe Tyr Met Ser Lys Tyr Val Glu Phe Met Asp Thr	489
130 135 140		
gtt atc atg ata ctg aag ccg agc acc agg caa ata agc ttc ctc cac	Val Ile Met Ile Leu Lys Arg Ser Thr Arg Gln Ile Ser Phe Leu His	537
145 150 155 160		
gtt tat cat cat tct tca att tcc ctc att tgg tgg gct att gct cat	Val Tyr His His Ser Ser Ile Ser Leu Ile Trp Trp Ala Ile Ala His	585
165 170 175		
cac gct cct ggc ggt gaa gca tat tgg tct gcg gct ctg aac tca gga	His Ala Pro Gly Gly Glu Ala Tyr Trp Ser Ala Ala Leu Asn Ser Gly	633
180 185 190		

gtg cat gtt ctc atg tat gcg tat tac ttc ttg gct gcc tgc ctt cga	681
Val His Val Leu Met Tyr Ala Tyr Tyr Phe Leu Ala Ala Cys Leu Arg	
195 200 205	
agt agc cca aag tta aaa aat aag tac ctt ttt tgg ggc agg tac ttg	729
Ser Ser Pro Lys Leu Lys Asn Lys Tyr Leu Phe Trp Gly Arg Tyr Leu	
210 215 220	
aca caa ttc caa atg ttc cag ttt atg ctg aac tta gtg cag gct tac	777
Thr Gln Phe Gln Met Phe Gln Phe Met Leu Asn Leu Val Gln Ala Tyr	
225 230 235 240	
tac gac atg aaa acg aat gcg cca tat cca caa tgg ctg atc aag att	825
Tyr Asp Met Lys Thr Asn Ala Pro Tyr Pro Gln Trp Leu Ile Lys Ile	
245 250 255	
ttg ttc tac tac atg atc tcg ttg ctg ttt ctt ttc ggc aat ttt tac	873
Leu Phe Tyr Tyr Met Ile Ser Leu Leu Phe Leu Phe Gly Asn Phe Tyr	
260 265 270	
gta caa aaa tac atc aaa ccc tct gac gga aag caa aag gga gct aaa	921
Val Gln Lys Tyr Ile Lys Pro Ser Asp Gly Lys Gln Lys Gly Ala Lys	
275 280 285	
act gag tga gctgtatcaa gccatagaaa ctctattatg ttagaacctg	970
Thr Glu	
290	
aagttggc ttcttatct ccacttatct tttaagcagc atcagtttg aaatgatgtg	1030
tgggcgtggt ctgcaagtag tcatcaatat aatcggcctg agcacttcag atggattgtt	1090
agaacatgag taaaagcggg tattacgggt tttatgtt accaaatcac cgcacgggtg	1150
aattgaaata ttccagattt gatcaatttc atctaaaaaa aa	1192

<210> 12
 <211> 290
 <212> PRT
 <213> Physcomitrella patens

<400> 12

Met Glu Val Val Glu Arg Phe Tyr Gly Glu Leu Asp Gly Lys Val Ser	
1 5 10 15	

Gln Gly Val Asn Ala Leu Leu Gly Ser Phe Gly Val Glu Leu Thr Asp	
20 25 30	

Thr Pro Thr Thr Lys Gly Leu Pro Leu Val Asp Ser Pro Thr Pro Ile	
35 40 45	

Val Leu Gly Val Ser Val Tyr Leu Thr Ile Val Ile Gly Gly Leu Leu

50

55

60

Trp Ile Lys Ala Arg Asp Leu Lys Pro Arg Ala Ser Glu Pro Phe Leu
 65 70 75 80.

Leu Gln Ala Leu Val Leu Val His Asn Leu Phe Cys Phe Ala Leu Ser
 85 90 95

Leu Tyr Met Cys Val Gly Ile Ala Tyr Gln Ala Ile Thr Trp Arg Tyr
 100 105 110

Ser Leu Trp Gly Asn Ala Tyr Asn Pro Lys His Lys Glu Met Ala Ile
 115 120 125

Leu Val Tyr Leu Phe Tyr Met Ser Lys Tyr Val Glu Phe Met Asp Thr
 130 135 140

Val Ile Met Ile Leu Lys Arg Ser Thr Arg Gln Ile Ser Phe Leu His
 145 150 155 160

Val Tyr His His Ser Ser Ile Ser Leu Ile Trp Trp Ala Ile Ala His
 165 170 175

His Ala Pro Gly Gly Glu Ala Tyr Trp Ser Ala Ala Leu Asn Ser Gly
 180 185 190

Val His Val Leu Met Tyr Ala Tyr Tyr Phe Leu Ala Ala Cys Leu Arg
 195 200 205

Ser Ser Pro Lys Leu Lys Asn Lys Tyr Leu Phe Trp Gly Arg Tyr Leu
 210 215 220

Thr Gln Phe Gln Met Phe Gln Phe Met Leu Asn Leu Val Gln Ala Tyr
 225 230 235 240

Tyr Asp Met Lys Thr Asn Ala Pro Tyr Pro Gln Trp Leu Ile Lys Ile
 245 250 255

Leu Phe Tyr Tyr Met Ile Ser Leu Leu Phe Leu Phe Gly Asn Phe Tyr
 260 265 270

Val Gln Lys Tyr Ile Lys Pro Ser Asp Gly Lys Gln Lys Gly Ala Lys
 275 280 285

Thr Glu
290

<210> 13
<211> 1410
<212> DNA
<213> *Phaeodactylum tricornutum*

<220>
<221> CDS
<222> (1)..(1410)
<223> Delta-5-desaturase

<400> 13
 atg gct ccg gat gcg gat aag ctt cga caa cgc cag acg act gcg gta
 Met Ala Pro Asp Ala Asp Lys Leu Arg Gln Arg Gln Thr Thr Ala Val
 1 5 10 15

 gcg aag cac aat gct acc ata tcg acg cag gaa cgc ctt tgc agt
 Ala Lys His Asn Ala Ala Thr Ile Ser Thr Gln Glu Arg Leu Cys Ser
 20 25 30

 ctg tct tcg ctc aaa ggc gaa gaa gtc tgc atc gac gga atc atc tat
 Leu Ser Ser Leu Lys Gly Glu Glu Val Cys Ile Asp Gly Ile Ile Tyr
 35 40 45

 gac ctc caa tca ttc gat cat ccc ggg ggt gaa acg atc aaa atg ttt
 Asp Leu Gln Ser Phe Asp His Pro Gly Gly Glu Thr Ile Lys Met Phe
 50 55 60

 ggt ggc aac gat gtc act gta cag tac aag atg att cac ccg tac cat
 Gly Gly Asn Asp Val Thr Val Gln Tyr Lys Met Ile His Pro Tyr His
 65 70 75 80

 acc gag aag cat ttg gaa aag atg aag cgt gtc ggc aag gtg acg gat
 Thr Glu Lys His Leu Glu Lys Met Lys Arg Val Gly Lys Val Thr Asp
 85 90 95

 ttc gtc tgc gag tac aag ttc gat acc gaa ttt gaa cgc gaa atc aaa
 Phe Val Cys Glu Tyr Lys Phe Asp Thr Glu Phe Glu Arg Glu Ile Lys
 100 105 110

 cga gaa gtc ttc aag att gtg cga cga ggc aag gat ttc ggt act ttg
 Arg Glu Val Phe Lys Ile Val Arg Arg Gly Lys Asp Phe Gly Thr Leu
 115 120 125

 gga tgg ttc ttc cgt gcg ttt tgc tac att gcc att ttc ttc tac ctg
 Gly Trp Phe Phe Arg Ala Phe Cys Tyr Ile Ala Ile Phe Phe Tyr Leu
 130 135 140

 cag tac cat tgg gtc acc acg gga acc tct tgg ctg ctg gcc gtg gcc
 Gln Tyr His Trp Val Thr Thr Gly Thr Ser Trp Leu Leu Ala Val Ala

145	150	155	160	
tac gga atc tcc caa gcg atg att ggc atg aat gtc cag cac gat gcc Tyr Gly Ile Ser Gln Ala Met Ile Gly Met Asn Val Gln His Asp Ala				528
165	170	175		
aac cac ggg gcc acc tcc aag cgt ccc tgg gtc aac gac atg cta ggc Asn His Gly Ala Thr Ser Lys Arg Pro Trp Val Asn Asp Met Leu Gly				576
180	185	190		
ctc ggt gcg gat ttt att ggt ggt tcc aag tgg ctc tgg cag gaa caa Leu Gly Ala Asp Phe Ile Gly Ser Lys Trp Leu Trp Gln Glu Gln				624
195	200	205		
cac tgg acc cac cac gct tac acc aat cac gcc gag atg gat ccc gat His Trp Thr His His Ala Tyr Thr Asn His Ala Glu Met Asp Pro Asp				672
210	215	220		
agc ttt ggt gcc gaa cca atg ctc cta ttc aac gac tat ccc ttg gat Ser Phe Gly Ala Glu Pro Met Leu Leu Phe Asn Asp Tyr Pro Leu Asp				720
225	230	235	240	
cat ccc gct cgt acc tgg cta cat cgc ttt caa gca ttc ttt tac atg His Pro Ala Arg Thr Trp Leu His Arg Phe Gln Ala Phe Phe Tyr Met				768
245	250	255		
ccc gtc ttg gct gga tac tgg ttg tcc gct gtc ttc aat cca caa att Pro Val Leu Ala Gly Tyr Trp Leu Ser Ala Val Phe Asn Pro Gln Ile				816
260	265	270		
ctt gac ctc cag caa cgc ggc gca ctt tcc gtc ggt atc cgt ctc gac Leu Asp Leu Gln Gln Arg Gly Ala Leu Ser Val Gly Ile Arg Leu Asp				864
275	280	285		
aac gct ttc att cac tcg cga cgc aag tat gcg gtt ttc tgg cgg gct Asn Ala Phe Ile His Ser Arg Arg Lys Tyr Ala Val Phe Trp Arg Ala				912
290	295	300		
gtg tac att gcg gtg aac gtg att gct ccg ttt tac aca aac tcc ggc Val Tyr Ile Ala Val Asn Val Ile Ala Pro Phe Tyr Thr Asn Ser Gly				960
305	310	315	320	
ctc gaa tgg tcc tgg cgt gtc ttt gga aac atc atg ctc atg ggt gtg Leu Glu Trp Ser Trp Arg Val Phe Gly Asn Ile Met Leu Met Gly Val				1008
325	330	335		
gcg gaa tcg ctc gcg ctg gcg gtc ctg ttt tcg ttg tcg cac aat ttc Ala Glu Ser Leu Ala Val Leu Phe Ser Leu Ser His Asn Phe				1056
340	345	350		
gaa tcc gcg gat cgc gat ccg acc gcc cca ctg aaa aag acg gga gaa Glu Ser Ala Asp Arg Asp Pro Thr Ala Pro Leu Lys Lys Thr Gly Glu				1104
355	360	365		
cca gtc gac tgg ttc aag aca cag gtc gaa act tcc tgc act tac ggt Pro Val Asp Trp Phe Lys Thr Gln Val Glu Thr Ser Cys Thr Tyr Gly				1152
370	375	380		

gga ttc ctt tcc ggt tgc ttc acg gga ggt ctc aac ttt cag gtt gaa	385	390	395	400	1200
Gly Phe Leu Ser Gly Cys Phe Thr Gly Gly Leu Asn Phe Gln Val Glu					
cac cac ttg ttc cca cgc atg agc agc gct tgg tat ccc tac att gcc	405	410	415		1248
His His Leu Phe Pro Arg Met Ser Ser Ala Trp Tyr Pro Tyr Ile Ala					
ccc aag gtc cgc gaa att tgc gcc aaa cac ggc gtc cac tac gcc tac	420	425	430		1296
Pro Lys Val Arg Glu Ile Cys Ala Lys His Gly Val His Tyr Ala Tyr					
tac ccg tgg atc cac caa aac ttt ctc acc gtc cgc tac atg cac	435	440	445		1344
Tyr Pro Trp Ile His Gln Asn Phe Leu Ser Thr Val Arg Tyr Met His					
gcg gcc ggg acc ggt gcc aac tgg cgc cag atg gcc aga gaa aat ccc	450	455	460		1392
Ala Ala Gly Thr Gly Ala Asn Trp Arg Gln Met Ala Arg Glu Asn Pro					
ttg acc gga cgg gcg taa	465				1410
Leu Thr Gly Arg Ala					
<210> 14					
<211> 469					
<212> PRT					
<213> Phaeodactylum tricornutum					
<400> 14					
Met Ala Pro Asp Ala Asp Lys Leu Arg Gln Arg Gln Thr Thr Ala Val	1	5	10	15	
Ala Lys His Asn Ala Ala Thr Ile Ser Thr Gln Glu Arg Leu Cys Ser	20	25	30		
Leu Ser Ser Leu Lys Gly Glu Glu Val Cys Ile Asp Gly Ile Ile Tyr	35	40	45		
Asp Leu Gln Ser Phe Asp His Pro Gly Gly Glu Thr Ile Lys Met Phe	50	55	60		
Gly Gly Asn Asp Val Thr Val Gln Tyr Lys Met Ile His Pro Tyr His	65	70	75	80	
Thr Glu Lys His Leu Glu Lys Met Lys Arg Val Gly Lys Val Thr Asp	85	90	95		

Phe Val Cys Glu Tyr Lys Phe Asp Thr Glu Phe Glu Arg Glu Ile Lys
 100 105 110

Arg Glu Val Phe Lys Ile Val Arg Arg Gly Lys Asp Phe Gly Thr Leu
 115 120 125

Gly Trp Phe Phe Arg Ala Phe Cys Tyr Ile Ala Ile Phe Phe Tyr Leu
 130 135 140

Gln Tyr His Trp Val Thr Thr Gly Thr Ser Trp Leu Leu Ala Val Ala
 145 150 155 160

Tyr Gly Ile Ser Gln Ala Met Ile Gly Met Asn Val Gln His Asp Ala
 165 170 175

Asn His Gly Ala Thr Ser Lys Arg Pro Trp Val Asn Asp Met Leu Gly
 180 185 190

Leu Gly Ala Asp Phe Ile Gly Ser Lys Trp Leu Trp Gln Glu Gln
 195 200 205

His Trp Thr His His Ala Tyr Thr Asn His Ala Glu Met Asp Pro Asp
 210 215 220

Ser Phe Gly Ala Glu Pro Met Leu Leu Phe Asn Asp Tyr Pro Leu Asp
 225 230 235 240

His Pro Ala Arg Thr Trp Leu His Arg Phe Gln Ala Phe Phe Tyr Met
 245 250 255

Pro Val Leu Ala Gly Tyr Trp Leu Ser Ala Val Phe Asn Pro Gln Ile
 260 265 270

Leu Asp Leu Gln Gln Arg Gly Ala Leu Ser Val Gly Ile Arg Leu Asp
 275 280 285

Asn Ala Phe Ile His Ser Arg Arg Lys Tyr Ala Val Phe Trp Arg Ala
 290 295 300

Val Tyr Ile Ala Val Asn Val Ile Ala Pro Phe Tyr Thr Asn Ser Gly
 305 310 315 320

Leu Glu Trp Ser Trp Arg Val Phe Gly Asn Ile Met Leu Met Gly Val

325

330

335

Ala Glu Ser Leu Ala Leu Ala Val Leu Phe Ser Leu Ser His Asn Phe
 340 345 350

Glu Ser Ala Asp Arg Asp Pro Thr Ala Pro Leu Lys Lys Thr Gly Glu
 355 360 365

Pro Val Asp Trp Phe Lys Thr Gln Val Glu Thr Ser Cys Thr Tyr Gly
 370 375 380

Gly Phe Leu Ser Gly Cys Phe Thr Gly Gly Leu Asn Phe Gln Val Glu
 385 390 395 400

His His Leu Phe Pro Arg Met Ser Ser Ala Trp Tyr Pro Tyr Ile Ala
 405 410 415

Pro Lys Val Arg Glu Ile Cys Ala Lys His Gly Val His Tyr Ala Tyr
 420 425 430

Tyr Pro Trp Ile His Gln Asn Phe Leu Ser Thr Val Arg Tyr Met His
 435 440 445

Ala Ala Gly Thr Gly Ala Asn Trp Arg Gln Met Ala Arg Glu Asn Pro
 450 455 460

Leu Thr Gly Arg Ala
 465

<210> 15
 <211> 3598
 <212> DNA
 <213> artificial sequence

<220>
 <221> misc_feature
 <222> (1)..(3598)

<223> The sequence is a plant promoter-terminator expression cassette in vector
 pUC19

<400> 15
 tcgcgcgttt cggtgatgac ggtgaaaacc tctgacacat gcagctcccg gagacggtca 60
 cagttgtct gtaagcggat gccgggagca gacaagcccg tcagggcgcg tcagcgggtg 120

ttggcgggtg tcggggctgg cttactatg cggcatcaga gcagattgt	180
accatatgcg gtgtgaaata ccgcacagat gcgtaaggag aaaataccgc	240
attcgccatt caggctgcgc aactgttggg aagggcgatc ggtgcgggccc	300
tacgccagct ggcgaaaggg gnatgtgctg caaggcgatt aagttggta acgcagggt	360
tttcccagtc acgacgttgt aaaacgacgg ccagtgaatt cggcgccg agctccctg	420
gcaaatttac acattgccac taaacgtcta aacccttgc	480
tttatgtttagt tatttgattt gcgataaatt tttatatttgc	540
tttatgctaa cgtttgc当地 cacttagcaa tttgcaagtt gattaattga ttctaaatta	600
ttttgtctt ctaaatacat atactaatca actggaaatg taaatatttgc	660
tactatagga gaattaaagt gagtgaatat ggtaccacaa gggttggaga tttaattgtt	720
gcaatgctgc atggatggca tatacaccaa acattcaata attcttgagg ataataatgg	780
taccacaccaa gatttgaggt gcatgaacgt cacgtggaca aaaggttttag taattttca	840
agacaacaat gttaccacac acaagtttg aggtgcattgc atggatgcc tggaaagt	900
ttaaaaatat tttggaaatg atttgcattgg aagccatgtg taaaaccatg acatccactt	960
ggaggatgca ataatgaaga aaactacaaa tttacatgca actagttatg catgtatct	1020
atataatgag gattttgcaa tactttcatt catacacact cactaagtt tacacgatta	1080
taatttcttc atagccagcc caccgcggtg ggcggccgc tgcagtctag aaggcctcct	1140
gcttaatga gatatgcgag acgcctatga tcgcattgata tttgctttca attctgttgc	1200
gcacgttgta aaaaacctga gcatgtgttag ctcagatcct taccgcggc ttccgttcat	1260
tctaatgaat atatcacccg ttactatcgt attttatga ataatattct ccgttcaatt	1320
tactgattgt ccgtcgacga attcgagctc ggcgcaccaa gcttggcgta atcatggta	1380
tagctgtttc ctgtgtgaaa ttgttatccg ctcacaattt cacacaacat acgagccgga	1440
agcataaaagt gtaaaaggctg ggggcctaa tgagtgagct aactcacatt aattgcgttg	1500
cgctcactgc ccgcatttcca gtcggaaac ctgtcgcc agctgcattt atgaatcgcc	1560
caacgcgcgg ggagaggcgg ttgcgtatt gggcgttcc cgcatttcc gctcactgac	1620
tcgctgcgtcg cggtcgatcg gctgcggcga gcggtatcag ctcactcaaa ggcggtaata	1680
cggttatcca cagaatcagg ggataacgca ggaaagaaca tgtgagcaaa aggccagcaa	1740
aaggccagga accgtaaaaa ggccgcgttg ctggcgatccataggtt ccgcggccct	1800
gacgagcatc acaaaaatcg acgctcaagt cagaggtggc gaaacccgac aggactataa	1860

agataccagg	cgtttcccc	tggaagctcc	ctcggtcgct	ctcctgttcc	gaccctgccc	1920
cttaccggat	acctgtccgc	ctttctccct	tcgggaagcg	tggcgctttc	tcatagctca	1980
cgctgttaggt	atctcagttc	ggtgttaggtc	gttcgctcca	agctgggctg	tgtgcacgaa	2040
ccccccgttc	agccccgaccg	ctgcccctta	tccggtaact	atcgcttga	gtccaaacccg	2100
gtaagacacg	acttatcgcc	actggcagca	gccactggta	acaggattag	cagagcgagg	2160
tatgttaggcg	gtgctacaga	gttcttgaag	tggtggccta	actacggcta	cactagaagg	2220
acagtatttg	gtatctgcgc	tctgctgaag	ccagttacct	tcggaaaaaag	agttggtagc	2280
tcttgatccg	gcaaacaac	caccgctgg	agcgggggtt	ttttgtttt	caagcagcag	2340
attacgcgca	aaaaaaaagg	atctcaagaa	gatccttga	tctttctac	ggggctcgac	2400
gctcagtgg	acgaaaactc	acgttaaggg	attttggtca	ttagattatc	aaaaaggatc	2460
ttcacctaga	tcctttaaa	ttaaaaatga	agttttaat	caatctaaag	tatatatgag	2520
taaacttgg	ctgacagtta	ccaatgctta	atcagtgagg	cacctatctc	agcgatctgt	2580
ctatttcg	tttccatagt	tgcctgactc	cccgctgtgt	agataactac	gatacgggag	2640
ggcttaccat	ctggccccag	tgctgcaatg	ataccgcgag	acccacgctc	accggctcca	2700
gatttatcag	caataaacca	gccagccgga	agggccgagc	gcagaagtgg	tcctgcaact	2760
ttatccgcct	ccatccagtc	tattaattgt	tgccggaaag	ctagagtaag	tagttcgcca	2820
gttaatagtt	tgcgcaacgt	tgttgccatt	gctacaggca	tcgtgggtgc	acgctcgctg	2880
tttggtatgg	cttcattcag	ctccggttcc	caacgatcaa	ggcgagttac	atgatcccc	2940
atgttgc	aaaaagcggt	tagtccttc	ggtcctccga	tcgttgc	aagtaagttg	3000
gccgcagtgt	tatcactcat	ggttatggca	gcactgcata	attctcttac	tgtcatgcca	3060
tccgtaagat	gttttctgt	gactggtag	tactcaacca	agtcattctg	agaatagtgt	3120
atgcggcgac	cgagttgctc	ttgcccggcg	tcaatacggg	ataataccgc	gccacatagc	3180
agaactttaa	aagtgc	cattggaaaa	cgttttcg	ggcgaaaaact	ctcaaggatc	3240
ttaccgctgt	tgagatccag	ttcgatgtaa	cccactcg	cacccaaactg	atcttcagca	3300
tctttactt	tcaccagcgt	ttctgggtga	gcaaaaacag	gaaggcaaaa	tgccgcaaaa	3360
aaaggaaataa	gggcgacacg	gaaatgttga	atactcatac	tcttccttt	tcaatattat	3420
tgaagcattt	atcagggtta	ttgtctcatg	agcggataca	tatttgaatg	tatttagaaa	3480
aataaacaaa	taggggttcc	gcmcacattt	ccccgaaaag	tgccacactga	cgtctaaagaa	3540

accattatta tcatgacatt aacctataaa aataggcgta tcacgaggcc cttcgtc 3598

<210> 16
 <211> 3590
 <212> DNA
 <213> artificial sequence

<220>
 <221> misc_feature
 <222> (1)..(3590)

<223> The sequence is a plant promoter-terminator expression cassette in vector pUC19

<400> 16	
tcgcgcgttt cgggtatgac ggtgaaaacc tctgacacat gcagctcccg gagacggtca	60
cagcttgtct gtaagcgat gcccggagca gacaagcccg tcagggcgcg tcagcggtg	120
ttggcggtg tcggggctgg cttactatg cggcatcaga gcagattgtt ctgagagtgc	180
accatatgct gtgtgaaata ccgcacagat gcgttaaggag aaaataccgc atcaggcgcc	240
attcgccatt caggctgcgc aactgttggg aagggcgatc ggtgcgggccc tcttcgtat	300
tacgccagct ggcgaaaggg ggatgtgctg caaggcgatt aagttgggtt acgcccagggt	360
tttcccagtc acgacgttgtt aaaacgacgg ccagtgaatt cggcgcccg agctcctcga	420
gcaaatttac acattgccac taaacgtcta aacccttgcattt gttttactat	480
gtgtgttatg tatttgcattt gcgataaaatt tttatatttgcgtt gttttactat	540
tttatgctaa cgtttgccaa cacttagcaa tttgcaagtt gattaatttgcgtt	600
ttttgtctt ctaaatacat atactaatca actggaaatg taaatatttgcgtt	660
tactatagga gaatttgcgtt ggttgcgtt ggttgcgtt gtttgcgtt	720
gcaatgctgc atggatggca tatacaccaaa acattcaata attcttgcgtt ataataatgg	780
taccacacaa gatttgcgtt gcatgaacgt cacgtggaca aaagggttttttca	840
agacaacaat gttaccacac acaagtttttgcgtt aggtgcgttgcgtt atggatgcggcgtt	900
ttaaaaat tttggaaatg atttgcgtt ggttgcgtt gtttgcgtt gtttgcgtt	960
ggaggatgca ataatgcgtt ggttgcgtt ggttgcgtt gtttgcgtt gtttgcgtt	1020
atataatgat gttttgcgtt gtttgcgtt gtttgcgtt gtttgcgtt gtttgcgtt	1080
taatttcttc atagccagcg gatccgtat cgggcccgtt agcgttaacc ctgcttaat	1140
gagatatgca agacgcctat gatcgcatgtt tatttgcgtt caattctgtt gtgcacgtt	1200

taaaaaacct gagcatgtgt agctcagatc cttaccgccc gtttcgggttcc attctaattga 1260
atataatcacc cgttactatc gtattttat gaataatatt ctccggttcaa tttactgatt 1320
gtccgtcgac gaattcgagc tcggcgcc aagcttggcg taatcatggt catagctgtt 1380
tcctgtgtga aattgttatac cgctcacaat tccacacaac atacgagccg gaagcataaa 1440
gtgttaagcc tgggggtgcct aatgagtgag ctaactcaca ttaattgcgt tgctgcact 1500
gcccgcgttcc cagtcggaa acctgtcgta ccagctgcataatgaatcg gccaacgcgc 1560
ggggagaggc ggtttgcgta ttggcgctc ttccgcttcc tcgctcactg actcgctgcg 1620
ctcggtcgtt cggtcgccg gagcggtatac agctcactca aaggcgtaa tacggttatac 1680
cacagaatca gggataacg cagggaaagaa catgtgagca aaaggccagc aaaaggccag 1740
gaaccgtaaa aaggccgcgt tgctggcggtt tttccatagg ctccgcggcc ctgacgagca 1800
tcacaaaaat cgacgctcaa gtcagaggtg gcgaaacccg acaggactat aaagatacca 1860
ggcgtttccc cctggaagct ccctcgctcg ctctcctgtt ccgaccctgc cgcttaccgg 1920
atacctgtcc gccttctcc ctccggaaag cgtggcggtt tctcatagct cacgctgttag 1980
gtatctcagt tcgggttagg tggttcgctc caagctggc tgggtgcacg aaccccccgt 2040
tcagccgcac cgctcgccct tatccggtaa ctatcgctt gagtccaacc cggtaaagaca 2100
cgacttatcg ccactggcag cagccactgg taacaggatt agcagagcga ggtatgttagg 2160
cggtgtaca gagttcttga agtgggtggcc taactacggc tacactagaa ggacagtatt 2220
tggtatctgc gctctgctga agccagttac ctccggaaaa agagttggta gctcttgatc 2280
cgccaacaaa accaccgctg gtagcggtgg ttttttgtt tgcaagcagc agattacgcg 2340
cagaaaaaaaaa ggatctcaag aagatcctt gatctttct acggggctcg acgctcagt 2400
gaacgaaaaac tcacgttaag ggatttttgtt catgagatta tcaaaaagga tcttcaccta 2460
gatcctttta aattaaaaat gaagttttaa atcaatctaa agtataatatg agtaaacttg 2520
gtctgacagt taccatgct taatcagtga ggcacctatc tcagcgatct gtctatttgc 2580
ttcatccata gttgcctgac tccccgtcggtt gtagataact acgatacggg agggcttacc 2640
atctggccccc agtgctgcaa tgataccgcg agacccacgc tcaccggctc cagatttatac 2700
agcaataaaac cagccagccg gaagggccga ggcgcagaagt ggtccgtcataa ctttatccgc 2760
ctccatccag tctattaaatt gttgcggga agctagagta agtagttcgc cagttaaatag 2820
tttgcgcac gttgttgcca ttgctacagg catcggtgg tcacgctcgat cgtttggat 2880

ggtttcattc agctccggtt cccaacgatc aaggcgagtt acatgatccc ccatgttgtg	2940
caaaaaagcg gttagctcct tcggtcctcc gatcgttgtc agaagtaagt tggccgcagt	3000
gttatcactc atggttatgg cagcaactgca taattctctt actgtcatgc catccgtaag	3060
atgctttct gtgactggtg agtactcaac caagtcattc tgagaatagt gtatgcggcg	3120
accaggttgc tcttgcccg cgtaataacg ggataatacc ggcacacata gcagaacttt	3180
aaaagtgctc atcattggaa aacgttcttc gggcgaaaaa ctctcaagga tcttaccgct	3240
gttgagatcc agttcgatgt aacccactcg tgcacccaaac tgatcttcag catctttac	3300
tttcaccagc gtttctgggt gagcaaaaac aggaaggcaa aatgccgcaa aaaaggaaat	3360
aaggcgaca cgaaaaatgtt gaataactcat actcttcctt tttcaatatt attgaagcat	3420
ttatcagggt tattgtctca tgagcggata catattgaa tgtattnaga aaaataaaaca	3480
aataggggtt ccgcgcacat ttccccgaaa agtgcacact gacgtctaag aaaccattat	3540
tatcatgaca ttaacctata aaaataggcg tatcacgagg cccttcgtc	3590

<210> 17
 <211> 3584
 <212> DNA
 <213> artificial sequence

<220>
 <221> misc_feature
 <222> (1)..(3584)

<223> The sequence is a plant promoter-terminator expression cassette in vector pUC19

<400> 17	
tcgcgcgttt cgggtatgac ggtaaaaacc tctgacacat gcagctcccg gagacggta	60
cagcttgtct gtaagcgat gcccggagca gacaagcccg tcagggcgcg tcaggggtg	120
ttggcgggtg tcggggctgg cttaactatg cggcatcaga gcagattgta ctgagagtgc	180
accatatgct gtgtgaaata ccgcacagat gcgttaaggag aaaataccgc atcaggcgcc	240
attcgccatt caggctgcgc aactgttggg aaggcgatc ggtgcgggcc tcttcgtat	300
tacgccagct ggcgaaagg ggatgtgctg caaggcgatt aagttggta acgcagggt	360
tttccccatgc acgacgttgtt aaaacgacgg ccagtgaatt cggcgccgc agtcctcgat	420
gcaaatttac acattgccac taaacgtcta aacccttgcata atttgtttt gtttactat	480
gtgtgttatg tatttgattt gcgataaaatt tttatatttgc tataacacct	540

tttatgctaa cgtttgccaa cacttagcaa tttgcaagtt gattaattga ttctaaatta	600
ttttgtctt ctaaatacat atactaatca actggaaatg taaatattg ctaatattc	660
tactatagga gaattaaagt gagtgaatat ggtaccacaa ggtttggaga tttaattgtt	720
gcaatgctgc atggatggca tatacaccaa acattcaata attcttggagg ataataatgg	780
taccacacaa gatttgaggt gcatgaacgt cacgtggaca aaaggtttag taattttca	840
agacaacaat gttaccacac acaagtttg aggtgcacgc atggatgccc tgtggaaagt	900
ttaaaaatat tttggaaatg atttgcacgg aagccatgtg taaaaccatg acatccactt	960
ggaggatgca ataatgaaga aaactacaaa tttacatgca actagttatg catgtgtct	1020
atataatgag gattttgcaa tactttcatt catacacact cactaagtt tacacgatta	1080
taatttcttc atagccagca gatctgccgg catcgatccc gggccatggc ctgcttaat	1140
gagatatgctg agacgcctat gatcgcatga tatttgcttt caattctgtt gtgcacgttg	1200
taaaaaacct gagcatgtgt agctcagatc cttaccgccc gtttcgggttc attctaata	1260
atataatcacc cgttactatc gtattttat gaataatatt ctccgttcaa tttactgatt	1320
gtccgtcgac gagctcggcg cgccaagctt ggcgtaatca tggcatagc tgttcctgt	1380
gtgaaattgt tatccgctca caattccaca caacatacga gccggaagca taaagtgtaa	1440
agcctgggt gcctaatgag tgagctaact cacattaatt gcgttgcgt cactgcccgc	1500
tttccagtcg ggaaacctgt cgtgccagct gcattaatga atcggccaac ggcggggag	1560
aggcggtttgcgtt cgtatggc gctcttccgc ttccctcgctc actgactcgc tgccgtcggt	1620
cgttcggctg cggcgagcgg tatcagctca ctcaaaggcg gtaatacggt tatccacaga	1680
atcaggggat aacgcaggaa agaacatgtg agcaaaaggc cagcaaaagg ccaggaaccg	1740
taaaaaggcc gcgttgcgg cgttttcca taggctccgc cccctgacg agcatcaca	1800
aaatcgacgc tcaagtcaga ggtggcgaaa cccgacagga ctataaagat accaggcg	1860
tccccctgga agctccctcg tgccgtctcc tgccgtgacc ctgcccgtt ccggatacct	1920
gtccgcctt ctccctcgg gaagcgtggc gctttctcat agctcacgct gtaggtatct	1980
cagttcggtg taggtcggtc gctccaagct gggctgtgtg cacgaacccc cggccgtcg	2040
cgaccgctgc gccttatccg gtaactatcg tcttgagtcc aacccggtaa gacacgactt	2100
atcgccactg gcagcagcca ctggtaacag gattagcaga gcgaggtatg taggcgggtc	2160
tacagagttc ttgaagtggt ggcctaacta cggctacact agaaggacag tatttggat	2220
ctgcgtctg ctgaagccag ttaccttcgg aaaaagagtt ggtagcttt gatccggcaa	2280

acaaaccacc	gctggtagcg	gtggttttt	tgttgcaag	cagcagatta	cgcgagaaa	2340
aaaaggatct	caagaagatc	ctttgatctt	ttctacgggg	tctgacgctc	agtggAACGA	2400
aaactcacgt	taagggattt	tggcatgag	attatcaaaa	aggatctca	cctagatcct	2460
tttaaattaa	aatgaagtt	ttaaatcaat	ctaaagtata	tatgagtaaa	cttggctgaa	2520
cagttaccaa	tgcttaatca	gtgaggcacc	tatctcagcg	atctgtctat	ttcggtcatc	2580
catagttgcc	tgactccccg	tcgtgtagat	aactacgata	cgggagggct	taccatctgg	2640
ccccagtgt	gcaatgatac	cgcgagaccc	acgctcaccc	gctccagatt	tatcagcaat	2700
aaaccagcca	gccggaaggg	ccgagcgcag	aagtggctt	gcaactttat	ccgcctccat	2760
ccagtctatt	aattgttgcc	gggaagctag	agtaagtagt	tcgcccagtta	atagttgctg	2820
caacgttgtt	gccatttgcta	caggcatcgt	ggtgtcacgc	tcgtcgtttgc	gtatggcttc	2880
attcagctcc	ggttcccaac	gatcaaggcg	agttacatga	tccccatgt	tgtgaaaaaa	2940
agcggttagc	tccttcggtc	ctccgatcgt	tgtcagaagt	aagttggccg	cagtgttatac	3000
actcatggtt	atggcagcac	tgcataattc	tcttactgtc	atgccatccg	taagatgctt	3060
ttctgtgact	ggtgagtagt	caaccaagtc	attctgagaa	tagtgtatgc	ggcgaccgag	3120
ttgctcttgc	ccggcgtcaa	tacggataaa	taccgcgcca	catagcagaa	ctttaaaagt	3180
gctcatcatt	ggaaaacgtt	cttcggggcg	aaaactctca	aggatcttac	cgctgttgag	3240
atccagttcg	atgtaaccca	ctcgtgcacc	caactgatct	tcagcatctt	ttactttcac	3300
cagcgtttct	gggtgagcaa	aaacaggaag	gcaaaatgcc	gcaaaaaagg	gaataaggc	3360
gacacggaaa	tgttgaatac	tcatactctt	ccttttcaa	tattattgaa	gcatttatca	3420
gggttattgt	ctcatgagcg	gatacatatt	tgaatgtatt	tagaaaaata	aacaaatagg	3480
ggttccgcgc	acatttcccc	gaaaagtgcc	acctgacgctc	taagaaacca	ttatttatcat	3540
gacattaacc	tataaaaata	ggcgtatcac	gaggccctt	cgtc		3584

<210> 18
 <211> 4507
 <212> DNA
 <213> artificial sequence

<220>
 <221> misc_feature
 <222> (1)..(4507)

<223> The sequence is a plant promoter-terminator expression cassette in vector
 pUC19

<400> 18	
tcgcgcgtt cggtgatgac ggtaaaaacc tctgacacat gcagctccc gagacggta	60
cagcttgtct gtaagcggat gccgggagca gacaagcccg tcagggcgcg tcagcgggtg	120
ttggcgggtg tcggggctgg cttaactatg cggcatcaga gcagattgta ctgagagtgc	180
accatatgcg gtgtgaaata ccgcacagat gcgtaaggag aaaataccgc atcaggcgcc	240
attcgccatt caggctgcgc aactgttggg aagggcgatc ggtgcgggcc tcttcgctat	300
tacgccagct ggcgaaaggg gnatgtgctg caagggcatt aagttggta acgccagggt	360
tttcccagtc acgacgttgt aaaacgacgg ccagtgaatt cggcgcccg agtcctcgaa	420
gcaaatttac acattgccac taaacgtcta aacccttgcata ttgtttttt gtttactat	480
gtgtgttatg tatttgattt gcgataaaatt tttatatttg gtactaaatt tataacacct	540
tttatgctaa cgtttgccaa cacttagcaa tttgcaagtt gattaattga ttctaaat	600
ttttgtctt ctaaatacat atactaatca actggaaatg taaatatttg ctaatatttc	660
tactatagga gaattaaagt gagtgaatat ggtaccacaa ggtttggaga tttaattgtt	720
gcaatgctgc atggatggca tatacaccaa acattcaata attctgagg ataataatgg	780
taccacacaa gatttgaggt gcatgaacgt cacgtggaca aaaggttttag taattttca	840
agacaacaat gttaccacac acaagttttg aggtgcattgc atggatgccc tgtggaaagt	900
ttaaaaatat ttggaaatg atttgcattgg aagccatgtg taaaaccatg acatccactt	960
ggaggatgca ataatgaaga aaactacaaa ttacatgca actagttatg catgtatct	1020
atataatgag gattttgcaa tacttcatt catacacact cactaagtt tacacgatta	1080
taatttcttc atagccagcc caccgcggtg ggcggccgcc tgcagtctag aaggcctcct	1140
gcttaatga gatatgcgag acgcctatga tcgcattgata ttgcattttca attctgttgt	1200
gcacgttgta aaaaacctga gcatgtgttag ctcagatcct taccgcgggt ttgcgttcat	1260
tctaattatc atatcacccg ttactatcgt attttatga ataattattct ccgttcaatt	1320
tactgattgt ccgtcgagca aatttacaca ttgccactaa acgtctaaac ctttgtaatt	1380
tgtttttgtt ttactatgtg tgcgtatgtat ttgatttgcg ataaattttt atattggta	1440
ctaaattat aacacctttt atgctaacgt ttgccaacac ttagcaattt gcaagttgat	1500
taattgattc taaatttattt ttgtcttcta aatacatata ctaatcaact ggaaatgtaa	1560

atatttgcta atatttctac tataggagaa tttaaagttag tgaatatggt accacaagg	1620
ttggagattt aattgttgca atgctgcatg gatggcatat acaccaaaca ttcaataatt	1680
cttgaggata ataatggtac cacacaagat ttgaggtgca tgaacgtcac gtggacaaaa	1740
ggttagtaa ttttcaaga caacaatgtt accacacaca agtttgagg tgcacatgcac	1800
gatgccctgt ggaaagttt aaaaatattt ggaaatgatt tgcacatggaa ccatgtgtaa	1860
aaccatgaca tccacttgga ggatgcaata atgaagaaaa ctacaaattt acatgcaact	1920
agttatgcat gtagtctata taatgaggat tttcaatac tttcattcat acacactcac	1980
taagtttac acgattataa tttcttcata gccagcggat ccgatatcg gcccgcgtac	2040
gttaaccctg cttaatgag atatgcgaga cgccatgtat cgcatgtat ttgcattcaa	2100
ttctgttgtg cacgttgtaa aaaacctgag catgtgtac tcagatcctt accggcggtt	2160
tcgggttcat ctaatgaaata tattcacccgt tactatcgta ttttatgaa taatattctc	2220
cgttcaattt actgattgtc cgtcgacgaa ttcgagctcg ggcgcgcaag cttggcgtaa	2280
tcatggtcat agctgtttcc tgtgtgaaat ttttatccgc tcacaattcc acacaacata	2340
cgagccggaa gcataaaagtg taaagcctgg ggtgcctaact gagtgagcta actcacatta	2400
attgcgttgc gctcaactgcc cgctttccag tcgggaaacc tgcgtgcgc gctgcattaa	2460
tgaatcgccc aacgcgcggg gagaggcggt ttgcgttattt ggcgccttc cgcttcctcg	2520
ctcaactgact cgctgcgctc ggtcggttcgg ctgcggcgag cggatcagc tcactcaaag	2580
gcggtaatac gtttatccac agaatcaggg gataacgcag gaaagaacat gtgagcaaaa	2640
ggccagcaaa aggccaggaa ccgtaaaaag gccgcgttgc tggcggtttt ccataggctc	2700
cgccccctg acgagcatca caaaaatcgca cgctcaagtc agaggtggcg aaacccgaca	2760
ggactataaa gataccaggc gttccccctt ggaagctccc tcgtgcgcctc tcctgttccg	2820
accctgcgc ttaccggata cctgtccgc tttctccctt cgggaagcgt ggcgcattct	2880
catagctcac gctgttaggtt tctcagttcg gtgttaggtcg ttgcgtccaa gctggctgt	2940
gtgcacgaac cccccgttca gcccgcaccgc tgccgcctt ccggtaacta tcgtcttgag	3000
tccaacccgg taagacacga cttatgcaca ctggcagcag ccactggtaa caggattagc	3060
agagcgaggt atgttaggcgg tgctacagag ttcttgaagt ggtggctaa ctacggctac	3120
actagaagga cagtatttgg tatctgcgtc ctgctgaagc cagttacctt cggaaaaaga	3180
gttggtagct cttgatccgg caaacaacc accgctggta gcgggtgttt ttttgggtgc	3240
aagcagcaga ttacgcgcag aaaaaaagga tctcaagaag atcctttgat cttttctacg	3300

gggtctgacg	ctcagtggaa	cgaaaactca	cgttaaggga	ttttggtcat	gagattatca	3360
aaaaggatct	tcacctagat	cctttaaat	taaaaatgaa	gttttaaatc	aatctaaagt	3420
atatatgagt	aaacttggtc	tgacagttac	caatgctta	tcagtgaggc	acctatctca	3480
gcgatctgtc	tatTCgttc	atccatagtt	gcctgactcc	ccgtcgtgta	gataactacg	3540
atacgggagg	gcttaccatc	tggccccagt	gctgcaatga	taccgcgaga	cccacgctca	3600
ccggctccag	atttatcagc	aataaaccag	ccagccggaa	gggcccagcg	cagaagtgg	3660
cctgcaactt	tatccgcctc	catccagtct	attaattgtt	gccgggaagc	tagagtaagt	3720
agttcgccag	ttaatagttt	gwgcaacgtt	gttgccattg	ctacaggcat	cgtgggtgtca	3780
cgctcgtcgt	ttggtatggc	ttcattcagc	tccgggtccc	aacgatcaag	gwgagttaca	3840
tgtatccccca	tgttgtgcaa	aaaagcggtt	agtccttcg	gtcctccgat	cgttgtcaga	3900
agtaagttgg	ccgcagtgtt	atcactcatg	gttatggcag	cactgcataa	ttctcttact	3960
gtcatgccat	ccgtaagatg	ctttctgtg	actggtgagt	actcaaccaa	gtcattctga	4020
gaatagtgt	tgcggcgacc	gagttgctct	tgccggcgt	caatacggga	taataccg	4080
ccacatagca	gaacttaaa	agtgcatac	attggaaaac	gttctcggg	gwgaaaactc	4140
tcaaggatct	taccgctgtt	gagatccagt	tcgatgtaac	ccactcgtgc	acccaactga	4200
tcttcagcat	cttttacttt	caccagcggt	tctgggtgag	caaaaacagg	aaggcaaaat	4260
gccgcaaaaa	agggaataag	ggcgacacgg	aatgttgaa	tactcatact	cttcctttt	4320
caatattatt	gaagcattta	tcagggttat	tgtctcatga	gwgatacat	atttgaatgt	4380
atttagaaaa	ataaacaat	aggggttccg	cgcacattc	cccgaaaagt	gccacctgac	4440
gtctaagaaa	ccattattat	catgacatta	acctataaaa	ataggcgtat	cacgaggccc	4500
tttcgtc						4507

<210> 19
 <211> 17752
 <212> DNA
 <213> *Phaeodactylum tricornutum*, *Physcomitrella patens*

<220>
 <221> CDS
 <222> (11543)..(12415)
 <223> Delta-6-elongase

<220>
 <221> CDS

<222> (13313)..(14890)
 <223> Delta-6-desaturase

<220>
 <221> CDS
 <222> (15791)..(17200)
 <223> Delta-5-desaturase

<400> 19	
gatctggcgc cggccagcga gacgagcaag attggccgcc gcccgaaacg atccgacagc	60
gcccggcagca caggtgcgcgca ggcaaattgc accaacgcac acagcgccag cagaatgcc	120
tagtggcgg tgacgtcggtt cgagtgaacc agatcgcgcgca ggaggccccgg cagcaccggc	180
ataatcaggc cgatgcccac agcgctcgagc gcgcacagtgc tcagaattac gatcagggtt	240
atgttgggtt tcacgtctgg cctccggacc agcctccgct ggtccgattt aacgcgcgga	300
ttctttatca ctgataagtt ggtggacata ttatgtttt cagtgataaa gtgtcaagca	360
tgacaaaagtt gcagccgaat acagtgatcc gtgcccctt ggacctgtt aacgaggctg	420
gcgttagacgg tctgacgaca cgcggactgg cggAACGGTT gggggttcag cagccggcgc	480
tttactggca cttcaggaac aagcgggcgc tgctcgacgc actggccgaa gccatgctgg	540
cgggagaatca tacgcattcg gtgcccggag ccgacgacga ctggcgctca tttctgatcg	600
ggaatgcccgg cagttcagg caggcgctgc tcgcctaccg cgatggcgccg cgcattccatg	660
ccggcacgcg accggggcgca cgcggatgg aaacggccga cgccgcggctt cgcttcctct	720
gcgaggcggg ttttcggcc ggggacgccc tcaatgcgcgt gatgacaatc agctacttca	780
ctgttggggc cgtgcttgag gaggcggccg gcgcacagcga tgccggcgag cgccggggca	840
ccgttgaaca ggctccgctc tcgcccgtgt tgccggccgc gatagacgcc ttgcacgaag	900
ccgggtccgga cgcagcggttc gaggcaggac tcgcgggtat tgtcgtatgga ttggcgaaaa	960
ggaggctcggt tgtcaggaac gttgaaggac cgagaaaggg tgacgattga tcaggaccgc	1020
tgccggagcg caacccactc actacagcag agccatgtat acaacatccc ctcccccttt	1080
ccaccgcgtc agacgcccgt agcagccgc tacggcttt ttcatgcctt gcccgtcg	1140
ccaaggcctca cggccgcgtc cggcctctctt ggcggcttc tggcgcttt ccgccttc	1200
gctcactgac tcgctgcgcgt cggcggttcg gctgcggcga gcggtatcag ctcactcaaa	1260
ggcggtataa cggttatcca cagaatcagg ggataacgcgaa gaaagaaca tgcgtatggaaa	1320
aggccagcaa aaggccagga accgtaaaaaa ggccgcgttg ctggcggttt tccataggct	1380

ccgccccccct	gacgagcatc	acaaaaatcg	acgctcaagt	cagaggtggc	gaaacccgac	1440
aggactataa	agataccagg	cgttcccccc	tggaagctcc	ctcgtgcgt	ctccctgttcc	1500
gaccctgccc	cttaccggat	acctgtccgc	ctttctccct	tcggaaagcg	tggcgcttt	1560
ccgctgcata	accctgcttc	ggggtcatta	tagcgatttt	ttcggtatata	ccatccttt	1620
tcgcacgata	tacaggattt	tgccaaaggg	ttcgtgtaga	cttccttgg	tgtatccaac	1680
ggcgtcagcc	gggcaggata	ggtgaagtag	gcccacccgc	gagcgggtgt	tccttcttca	1740
ctgtccctta	ttcgcacctg	gccccgtctca	acgggaatcc	tgctctgcga	ggctggccgg	1800
ctaccggccgg	cgtaacagat	gagggcaagc	ggatggctga	tgaaacccaag	ccaaccagga	1860
agggcagccc	acctatcaag	gtgtactgcc	ttccagacga	acgaagagcg	attgaggaaa	1920
aggcggccgc	ggccggcatg	agcctgtcgg	cctacctgct	ggccgtcggc	cagggctaca	1980
aaatcacggg	cgtcggtggac	tatgagcacg	tcccgagact	ggcccgcatc	aatggcgacc	2040
tggggccct	ggggggcctg	ctgaaaactct	ggctcaccga	cgaccggcgc	acggcgcgg	2100
tcgggtatgc	cacgatccctc	gccctgctgg	cgaagatcga	agagaagcag	gacgagctt	2160
gcaaggatcat	gatggggcgt	gtccgccccga	gggcagagcc	atgactttt	tagccgctaa	2220
aacggccggg	gggtgcgcgt	gattgccaag	cacgtcccc	tgcgctccat	caagaagagc	2280
gacttcgcgg	agctggtgaa	gtacatcacc	gacgagcaag	gcaagaccga	gcgccttgc	2340
gacgctcacc	gggctggtt	ccctcgccgc	tgggctggcg	gccgtctatg	gccctgcaaa	2400
cgcgcagaa	acgcccgtcga	agccgtgtgc	gagacaccgc	ggccgcccggc	gttgtggata	2460
cctcgcggaa	aacttggccc	tcactgacag	atgagggcgc	gacgttgaca	cttgaggggc	2520
cgactcaccc	ggcgccggcgt	tgacagatga	ggggcaggct	cgatttcggc	cgccgacgtg	2580
gagctggcca	gcctcgcaaa	tcggcgaaaa	cgcctgattt	tacgcgagtt	tcccacagat	2640
gatgtggaca	agcctgggga	taagtgcct	gccccgtattga	cacttgagg	gccccgttt	2700
tgacagatga	ggggcgcgt	ccttgacact	tgagggcag	agtgcgtaca	gatgaggggc	2760
gcacctattt	acatttgagg	ggctgtccac	aggcagaaaa	tccagcattt	gcaagggttt	2820
ccgccccgtt	ttcggccacc	gctaaccctgt	cttttaacct	gcttttaaac	caatatttat	2880
aaaccttgtt	tttaaccagg	gctgcgcct	gtgcgcgt	ccgcgcacgc	cgaaggggg	2940
tgccccccct	tctcgaaccc	tcccgccccg	ctaacgcggg	cctcccatcc	ccccaggggc	3000
tgcgcggcc	ggccgcgaac	ggcctcaccc	caaaaaatggc	agcgctggca	gtccttgcca	3060
ttgcccggat	cggggcagta	acgggatggg	cgatcagccc	gagcgcgcacg	cccggaaagca	3120

ttgacgtgcc	gcaggtgctg	gcatcgacat	tcagcgacca	ggtgccgggc	agtgagggcg	3180
gcggcctggg	tggcggcctg	cccttcactt	cggccgtcgg	ggcattcacg	gacttcatgg	3240
cggggccggc	aatttttacc	ttgggcattt	ttggcatagt	ggtcgcgggt	gccgtgctcg	3300
tgttcggggg	tgcgataaac	ccagcgaacc	atttgaggtg	ataggttaaga	ttataccgag	3360
gtatgaaaac	gagaatttgg	cctttacaga	attactctat	gaagcgccat	atttaaaaag	3420
ctaccaagac	gaagaggatg	aagaggatga	ggaggcagat	tgccttgaat	atattgacaa	3480
tactgataag	ataatataatc	ttttatata	aagatatcgc	cgtatgtaa	gatttcaggg	3540
ggcaaggcat	aggcagcg	cttatcaata	tatctataga	atgggcaaag	cataaaaaact	3600
tgcattggact	aatgcttgaa	acccaggaca	ataacctt	agcttgtaaa	ttctatcata	3660
atgggtaat	gactccaact	tattgatagt	gttttatgtt	cagataatgc	ccgatgactt	3720
tgtcatgcag	ctccaccgat	tttgagaacg	acagcgactt	ccgtcccagc	cgtgccaggt	3780
gctgcctcag	attcaggtta	tgccgctcaa	ttcgctgcgt	atatcgctt	ctgattacgt	3840
gcagcttcc	cttcaggcgg	gattcataca	gcggccagcc	atccgtcatc	cataatcacca	3900
cgtcaaagg	tgacagcagg	ctcataagac	gccccagcgt	cgccatagtg	cgttcaccga	3960
atacgtgcgc	aacaaccgtc	ttccggagac	tgtcatacgc	gtaaaacagc	cagcgctggc	4020
gcgatttagc	cccgacatag	ccccactgtt	cgtccatttc	cgcgcagacg	atgacgtcac	4080
tgcccggtg	tatgcgcgag	gttaccgact	gcggcctgag	tttttaagt	gacgtaaaat	4140
cgtgttgg	ccaacgccc	taatgcgggc	tgttgcgg	catccaacgc	cattcatggc	4200
catatcaatg	atttctgg	gcgtaccggg	ttgagaagcg	gtgttaagt	actgcagtt	4260
ccatgttta	cggcagttag	agcagagata	gctgatgt	ccggcgg	ttttgccgtt	4320
acgcaccacc	ccgtcagtag	ctgaacagga	ggcacagctg	atagacacag	aagccactgg	4380
agcacctcaa	aaacaccatc	atacactaa	tcaatgtt	ggcagcatca	cccataattg	4440
tggtttcaaa	atcggtccg	tcgatactat	gttatacgcc	aactttgaaa	acaactttga	4500
aaaagctgtt	ttctggtatt	taaggttt	aatgcaagg	aacagtgaat	tggagttcgt	4560
cttggtaata	ttagcttctt	gggttatctt	taaatactgt	agaaaagagg	aaggaaataa	4620
taaatggcta	aaatgagaat	atcacccgaa	ttgaaaaaac	tgtcgaaaa	ataccgctgc	4680
gtaaaagata	cggaaaggaaat	gtctcctgct	aaggatata	agctggtggg	agaaaatgaa	4740
aacctatatt	taaaaatgac	ggacagccgg	tataaaggga	ccacctatga	tgtgaaacgg	4800

gaaaaggaca	tgtatgcata	gctggaaagga	aagctgcctg	ttccaaagg	cctgcactt	4860
gaacggcatg	atggctggag	caatctgctc	atgagtgagg	ccgatggcgt	ccttgctcg	4920
gaagagtatg	aagatgaaca	aagccctgaa	aagattatcg	agctgtatgc	ggagtgcac	4980
aggctcttc	actccatcga	catatcgat	tgtccctata	cgaatagctt	agacagccgc	5040
ttagccgaat	tggattactt	actgaataac	gatctggccg	atgtggattg	cgaaaactgg	5100
gaagaagaca	ctccatattaa	agatccgcgc	gagctgtatg	atttttaaa	gacggaaaag	5160
ccccaagagg	aacttgtctt	ttcccacggc	gacctggag	acagcaacat	ctttgtgaaa	5220
gatggcaaag	taagtggctt	tattgatctt	gggagaagcg	gcagggcgga	caagtggat	5280
gacattgcct	tctgcgtccg	gtcgatcagg	gaggatatcg	ggaaagaaca	gtatgtcgag	5340
ctatttttg	acttactggg	gatcaagcct	gattggaga	aaataaaaata	ttatatttt	5400
ctggatgaat	tgttttagta	cctagatgtg	gchgcaacgt	gccggcgaca	agcaggagcg	5460
caccgacttc	ttccgcatca	agtgtttgg	ctctcaggcc	gaggcccacg	gcaagtattt	5520
ggcaagggg	tcgctggat	tcgtgcaggg	caagattcg	aataccaat	acgagaagga	5580
cggccagacg	gtctacggga	ccgacttcat	tgccgataag	gtggattatc	tggacaccaa	5640
ggcaccaggc	gggtcaaata	aggaataagg	gcacattgcc	ccggcgtgag	tcggggcaat	5700
cccgcaagga	gggtgaatga	atcggacgtt	tgaccggaag	gcatacaggc	aagaactgt	5760
cgacgcgggg	tttccgccc	aggatgccga	aaccatcgca	agccgcaccc	tcatgcgtgc	5820
cccccgcaa	accttcagg	ccgtcggtc	gatggtccag	caagctacgg	ccaagatcga	5880
gcfgcagacg	gtgcaactgg	ctccccctgc	cctgcccgcg	ccatcgccg	ccgtggagcg	5940
ttcgcgtcgt	ctcgaacagg	aggcggcagg	tttggcgaag	tcgatgacca	tcgacacgcg	6000
aggaactatg	acgaccaaga	agcgaaaaac	cggccgcgag	gacctggcaa	aacaggtcag	6060
cggcccaag	caggccgcgt	tgctgaaaca	cacgaagcag	cagatcaagg	aaatgcagct	6120
ttccttgttc	gatattgcgc	cgtggccgga	cacgatgcga	gcgatgcca	acgacacggc	6180
ccgctctgcc	ctgttacca	cgcgcaacaa	gaaaatccc	cgcgaggcgc	tgcaaaacaa	6240
ggtcattttc	cacgtcaaca	aggacgtgaa	gatcacctac	accggcgtcg	agctgcgggc	6300
cgacgatgac	gaactgggt	ggcagcagg	gttggagtac	gcgaagcgca	cccctatcg	6360
cgagccgatc	acttcacgt	tctacgagct	ttgccaggac	ctgggctggt	cgatcaatgg	6420
ccggattac	acgaaggccg	aggaatgcct	gtcgcccta	caggcgacgg	cgatggcctt	6480
cacgtccgac	cgcgttggc	acctggaatc	ggtgtcgctg	ctgcaccgct	tccgcgtcct	6540

ggaccgtggc aagaaaacgt cccgttgcca ggtcctgatc gacgaggaaa	6600
gtttgctggc gaccactaca cgaattatcat atgggagaag taccgcaagc	6660
ggcccgacgg atgttcgact atttcagctc gcaccggag ccgtacccgc	6720
tcaagctgga aaccttccgc ctcatgtgcg gatcgattc cacccgcgtg	6780
aagaagtggc gcgagcaggt cggcgaagcc tgcgaaaggt tgcgaggcag	6840
cggcctggt gatccatgtgcg gatcgattc cacccgcgtg aagaagtggc	6900
gcgagcaggt ttactggcat ttcaggaaca agcggcact gctcgacgca	6960
cttgcttcgc tcagtatcgcc tcgggacgca cggcgcgctc tacgaactgc	7020
cgataaaacag aggattaaaa ttgacaattt tgattaaggc tcagattcga	7080
cggcttggag cggccgacgt gcaggatttc cgcgagatcc gattgtcggc	7140
cctgaagaaa gctccagaga tgttcgggtc cgtttacgag cacgaggaga	7200
aaaagcccat ggaggcggtc gctgaacggt tgcgagatgc cgtggcattc	7260
ggcgcctaca tcgacggcga gatcatttgg ctgtcggtct tcaaacagga	7320
ggacggcccc aaggacgctc acaaggcgca tctgtccggc gtttcgtgg	7380
agcccgaaaca gtcgacggcgtt ccggccgggtt tattgctcgatgatcg	7440
cgacagatttcc caacgggaat ctggtgatgc cgcatttca tcctcgccgc	7500
acttaatatt tcgctatttgc ggagcttgcgtt gtttatttgc gtctaccgc	7560
tgccggcg ggtcgcccgt ctgtcagcc gctgatggtc gtgttcatct	7620
ctgcccgtct gcttaggtac ccgatacgat tgatggcggt cctggggct	7680
atttgcggaa ctgcggcggtt ggcgtgttgc ttgcggcggtt ggcgtgttgc	7740
gtgttgcacac caaacgcagc gctagatcct gtcggcgatc cagcggcgct	7800
ggcggggcg gttccatgg cggtcgaaac cgtgctgacc cgcaagtggc	7860
acccttacgg cctggcaact ggcggccggaa ggacttctgc tcgttccagt	7920
agcttttagtgc ttgtatccgc caatcccgat gcctacagga accaatgttc	7980
tcggcctggc gtggctcggtt ctttctcaggc cccagatctg gggtcgatca	8040
gccggggatgc catcaggccg acagtcggaa ctgcgggtcc ccgacgtgtt	8100
ccatcggtt aggggagttt atatcgtaa cggtcacttc taaagaaata	8160
gcccactca gtttcctcagc cagcgatttc ctattatgtc ggcatagttc	8220
tcaagatcgaa cagcgttgcgag agaaatgttgcgag ggatgtataat	

tttgatcaca ggcagcaacg ctctgtcatc gttacaatca acatgctacc ctccgcgaga	8280
tcatccgtgt ttcaaaccggc gcagcttagt tgccgttctt ccgaatagca tcggtaacat	8340
gagcaaagtc tgccgcctta caacggctct cccgctgacg ccgtcccgga ctgatggct	8400
gcctgtatcg agtggtgatt ttgtgccgag ctgcccgtcg gggagctgtt ggctggctgg	8460
tggcaggata tattgtggtg taaacaaatt gacgcttaga caacttaata acacattgcg	8520
gacgttttta atgtactggg gtggtttttc ttttaccagg tgagacgggc aacagctgat	8580
tgcccttcac cgccctggccc tgagagagtt gcagcaagcg gtccacgctg gttgccccca	8640
gcagggcggaaa atcctgtttg atggtggttc cgaaatcgcc aaaatccctt ataaatcaaa	8700
agaatagccc gagatagggt ttagtgttgc tccagttgg aacaagagtc cactattaaa	8760
gaacgtggac tccaaacgtca aaggcgaaa aaccgtctat cagggcgatg gcccactacg	8820
tgaaccatca cccaaatcaa gtttttggg gtcgaggtgc cgtaaagcac taaatcgaa	8880
ccctaaaggg agcccccgat ttagagcttg acggggaaag ccggcgaacg tggcgagaaa	8940
ggaagggaaag aaagcgaaag gagcgggcgc cattcaggct gcgcaactgt tgggaaggcgc	9000
gatcggtgcg ggccctttcg ctattacgcc agctggcgaa agggggatgt gctgcaaggc	9060
gattaagttg ggtaacgcca gggtttccc agtcacgacg ttgtaaaacg acggccagtg	9120
aattaattcc catcttgaaa gaaatatagt ttaaatattt attgataaaaa taacaagtca	9180
ggtattatag tccaaagcaaa aacataaaatt tattgatgca agttttaaatt cagaaatatt	9240
tcaataactg attatatcag ctggtagatt gccgttagatg aaagactgag tgcgatatta	9300
tgtgtataac ataaatttgat gatatacgta gcttagctca tcgggggatc cgtcgaaatct	9360
agcttgggtc ccgctcagaa gaactcgta agaaggcgat agaaggcgat gcgctgcgaa	9420
tcgggagcgg cgataccgta aagcacgagg aagcggtcag cccattcgcc gccaagctct	9480
tcagcaatat cacgggtac caacgctatg tcctgatagc ggtccgcccac acccagccgg	9540
ccacagtcga tgaatccaga aaagcggcca ttttccacca tgatattcgg caagcaggca	9600
tcgccccatggg tcacgacgag atcctcgccg tcgggcatgc ggcgccttgcg cctggcgaac	9660
agttcggctg gcgcgagccc ctgatgctct tcgtccagat catcctgatc gacaagaccg	9720
gcttccatcc gagtacgtgc tcgctcgatg cgatgttcg cttgggtggc gatggcag	9780
gtagccggat caagcgatg cagccgcccgc attgcatcg ccatgatgga tactttctcg	9840
gcaggagcaa ggtgagatga caggagatcc tgccccggca ctgcggccaa tagcagccag	9900
tcccttcccg ctgcgttgac aacgtcgac acagctgcgc aaggaacgcc cgtcgtggcc	9960

agccacgata gccgcgctgc ctcgtcctgc agttcattca gggcaccgga caggtcggtc 10020
ttgacaaaaa gaaccggcg cccctgcgct gacagccgga acacggcggc atcagagcag 10080
ccgattgtct gttgtgccc gtcatagccg aatagcctct ccacccaagc ggccggagaa 10140
cctgcgtgca atccatcttg ttcaatccaa gctccatgg gccctcgact agagtcgaga 10200
tctggattga gagtgaatat gagactctaa ttggataccg agggaaattt atggaacgtc 10260
agtggagcat tttgacaag aaatattgc tagctgatag tgacccctt tagctttga 10320
acgcgcaata atggttctg acgtatgtgc ttagctcatt aaactccaga aacccgccc 10380
tgagtggctc cttcaacgtt gcggttctgt cagttccaaa cgtaaaacgg cttgtccgc 10440
gtcatcgccg ggggtcataa cgtgactccc ttaattctcc gctcatgatc ttgatccct 10500
gcccgcattcag atccctggcg gcaagaaagc catccagtt acttgcagg gcttcccaac 10560
cttaccagag ggcgcggccag ctggcaattc cggttcgctt gctgtccata aaaccgccc 10620
gtctagctat cggccatgtaa gcccactgca agctacctgc tttctcttg cgcttgcgtt 10680
ttccctgtc cagatagccc agtagctgac attcatccgg ggtcagcacc gtttctgcgg 10740
actggcttac tacgtgttcc gttccctta gcagccctg cggccctgagc gcttgcggca 10800
gcgtgaagct tgcattgcctg caggtcgacg gcgccggag ctcctcgagc aaatttacac 10860
attgccacta aacgtctaaa ccctttaat ttgttttgc tttactatgt gtgttatgt 10920
tttgatttgc gataaatttt tatatttgc actaaattta taacacctt tatgctaacg 10980
tttgccaaaca ctttgcattt tgcaagttga ttaatttgcattt ctaaatttattt tttgtcttct 11040
aaatacatat actaatcaac tggaaatgtt aatatttgc aatatttcta ctataggaga 11100
attaaagtga gtgaatatgg taccacaagg ttggagatt taatttgc aatgctgcat 11160
ggatggcata tacacccaaac attcaataat tcttgggat aataatggta ccacacaaga 11220
tttgagggtgc atgaacgtca cgtggacaaa aggttttagta attttcaag acaacaatgt 11280
taccacacac aagttttgag gtgcattgcattt ggatgcctg tggaaatgtt aaaaatattt 11340
tggaaatgtt ttgcatttgc gccatgttgc aaccatgac atccacttgg aggtgcaat 11400
aatgaagaaa actacaaattt tacatgcaac tagttatgca tttttcttatataatgagga 11460
tttgcaata ctttgcatttgc tacacactca ctaagtttgc caccattata attttcttcat 11520
agccagccca ccgcgggtggaa aa atg gag gtc gtg gag aga ttc tac ggt gag 11572
Met Glu Val Val Glu Arg Phe Tyr Gly Glu
1 5 10 15 20

ttg gat ggg aag gtc tcg cag ggc gtg aat gca ttg ctg ggt agt ttt Leu Asp Gly Lys Val Ser Gln Gly Val Asn Ala Leu Leu Gly Ser Phe 15 20 25	11620
ggg gtg gag ttg acg gat acg ccc act acc aaa ggc ttg ccc ctc gtt Gly Val Glu Leu Thr Asp Thr Pro Thr Lys Gly Leu Pro Leu Val 30 35 40	11668
gac agt ccc aca ccc atc gtc ctc ggt gtt tct gta tac ttg act att Asp Ser Pro Thr Pro Ile Val Leu Gly Val Ser Val Tyr Leu Thr Ile 45 50 55	11716
gtc att gga ggg ctt ttg tgg ata aag gcc agg gat ctg aaa ccg cgc Val Ile Gly Gly Leu Leu Trp Ile Lys Ala Arg Asp Leu Lys Pro Arg 60 65 70	11764
gcc tcg gag cca ttt ttg ctc caa gct ttg gtg ctt gtg cac aac ctg Ala Ser Glu Pro Phe Leu Leu Gln Ala Leu Val Leu Val His Asn Leu 75 80 85 90	11812
ttc tgt ttt gcg ctc agt ctg tat atg tgc gtg ggc atc gct tat cag Phe Cys Phe Ala Leu Ser Leu Tyr Met Cys Val Gly Ile Ala Tyr Gln 95 100 105	11860
gct att acc tgg cgg tac tct ctc tgg ggc aat gca tac aat cct aaa Ala Ile Thr Trp Arg Tyr Ser Leu Trp Gly Asn Ala Tyr Asn Pro Lys 110 115 120	11908
cat aaa gag atg gcg att ctg gta tac ttg ttc tac atg tct aag tac His Lys Glu Met Ala Ile Leu Val Tyr Leu Phe Tyr Met Ser Lys Tyr 125 130 135	11956
gtg gaa ttc atg gat acc gtt atc atg ata ctg aag cgc agc acc agg Val Glu Phe Met Asp Thr Val Ile Met Ile Leu Lys Arg Ser Thr Arg 140 145 150	12004
caa ata agc ttc ctc cac gtt tat cat cat tct tca att tcc ctc att Gln Ile Ser Phe Leu His Val Tyr His Ser Ser Ile Ser Leu Ile 155 160 165 170	12052
tgg tgg gct att gct cat cac gct cct ggc ggt gaa gca tat tgg tct Trp Trp Ala Ile Ala His His Ala Pro Gly Gly Glu Ala Tyr Trp Ser 175 180 185	12100
gcg gct ctg aac tca gga gtg cat gtt ctc atg tat gcg tat tac ttc Ala Ala Leu Asn Ser Gly Val His Val Leu Met Tyr Ala Tyr Tyr Phe 190 195 200	12148
ttg gct gcc tgc ctt cga agt agc cca aag tta aaa aat aag tac ctt Leu Ala Ala Cys Leu Arg Ser Ser Pro Lys Leu Lys Asn Lys Tyr Leu 205 210 215	12196
ttt tgg ggc agg tac ttg aca caa ttc caa atg ttc cag ttt atg ctg Phe Trp Gly Arg Tyr Leu Thr Gln Phe Gln Met Phe Gln Phe Met Leu 220 225 230	12244
aac tta gtg cag gct tac tac gac atg aaa acg aat gcg cca tat cca	12292

Asn	Leu	Val	Gln	Ala	Tyr	Tyr	Asp	Met	Lys	Thr	Asn	Ala	Pro	Tyr	Pro	
235					240				245				250			
caa	tgg	ctg	atc	aag	att	ttg	ttc	tac	tac	atg	atc	tcg	ttg	ctg	ttt	12340
Gln	Trp	Leu	Ile	Lys	Ile	Leu	Phe	Tyr	Tyr	Met	Ile	Ser	Leu	Leu	Phe	
					255				260				265			
ctt	ttc	ggc	aat	ttt	tac	gta	caa	aaa	tac	atc	aaa	ccc	tct	gac	gga	12388
Leu	Phe	Gly	Asn	Phe	Tyr	Val	Gln	Lys	Tyr	Ile	Lys	Pro	Ser	Asp	Gly	
					270				275				280			
aag	caa	aag	gga	gct	aaa	act	gag	tga	tctagaaggc	ctccctgcttt						12435
Lys	Gln	Lys	Gly	Ala	Lys	Thr	Glu									
					285				290							
aatgagatat	gcgagacgccc	tatgatcgca	tgatatttgc	tttcaattct	gttgtgcacg											12495
ttgtaaaaaaaa	cctgagcatg	tgtagctcag	atccttaccg	ccggtttcgg	ttcattctaa											12555
tgaatatatac	acccgttact	atcgtatttt	tatgaataat	attctccgtt	caatttactg											12615
attgtccgtc	gagcaaattt	acacattgcc	actaaacgtc	taaacccttg	taatttgttt											12675
ttgttttact	atgtgtgtta	tgtatttgat	ttgcgataaa	tttttatatt	tggtactaaa											12735
tttataacac	cttttatgct	aacgtttgcc	aacacttagc	aatttgcag	ttgattaatt											12795
gattctaaat	tattttgtc	ttctaaatac	atatactaata	caactggaaa	tgtaaatatt											12855
tgctaataatt	tctactatacg	gagaattaaa	gtgagtgaaat	atggtaccac	aaggtttgaa											12915
gatttaaattg	ttgcaatgct	gcatggatgg	catatacacc	aaacattcaa	taattcttga											12975
ggataataat	ggtaccacac	aagatttgag	gtgcatgaac	gtcacgtgga	caaaaggttt											13035
agtaattttt	caagacaaca	atgttaccac	acacaagttt	tgaggtgcat	gcatggatgc											13095
cctgtggaaa	gtttaaaaat	atttggaaa	tgatttgcat	ggaagccatg	tgtaaaacca											13155
tgacatccac	ttggaggatg	caataatgaa	gaaaactaca	aatttacatg	caactagtt											13215
tgcatgtagt	ctatataatg	aggatttgc	aatacttca	ttcatacaca	ctcactaagt											13275
tttacacgtatataatttct	tcatagccag	cgatgcc	atg	gta	ttc	gct	ggc	ggt								13330
			Met	Val	Phe	Ala	Gly	Gly								
					295											
gga	ctt	cag	cag	ggc	tct	ctc	gaa	gaa	aac	atc	gac	gtc	gag	cac	att	13378
Gly	Leu	Gln	Gln	Gly	Ser	Leu	Glu	Glu	Asn	Ile	Asp	Val	Glu	His	Ile	
					300			305					310			
gcc	agt	atg	tct	ctc	ttc	agc	gac	ttc	ttc	agt	tat	gtg	tct	tca	act	13426
Ala	Ser	Met	Ser	Leu	Phe	Ser	Asp	Phe	Phe	Ser	Tyr	Val	Ser	Ser	Thr	
					315			320					325			
gtt	ggt	tcg	tgg	agc	gta	cac	agt	ata	caa	cct	ttg	aag	cgc	ctg	acg	13474
Val	Gly	Ser	Trp	Ser	Val	His	Ser	Ile	Gln	Pro	Leu	Lys	Arg	Leu	Thr	

330	335	340	
agt aag aag cgt gtt tcg gaa agc gct gcc gtg caa tgt ata tca gct			13522
Ser Lys Lys Arg Val Ser Glu Ser Ala Ala Val Gln Cys Ile Ser Ala			
345	350	355	360
gaa gtt cag aga aat tcg agt acc cag gga act gcg gag gca ctc gca			13570
Glu Val Gln Arg Asn Ser Ser Thr Gln Gly Thr Ala Glu Ala Leu Ala			
365	370	375	
gaa tca gtc gtg aag ccc acg aga cga agg tca tct cag tgg aag aag			13618
Glu Ser Val Val Lys Pro Thr Arg Arg Ser Ser Gln Trp Lys Lys			
380	385	390	
tcg aca cac ccc cta tca gaa gta gca gta cac aac aag cca agc gat			13666
Ser Thr His Pro Leu Ser Glu Val Ala Val His Asn Lys Pro Ser Asp			
395	400	405	
tgc tgg att gtt gta aaa aac aag gtg tat gat gtt tcc aat ttt gcg			13714
Cys Trp Ile Val Val Lys Asn Lys Val Tyr Asp Val Ser Asn Phe Ala			
410	415	420	
gac gag cat ccc gga gga tca gtt att agt act tat ttt gga cga gac			13762
Asp Glu His Pro Gly Gly Ser Val Ile Ser Thr Tyr Phe Gly Arg Asp			
425	430	435	440
ggc aca gat gtt ttc tct agt ttt cat gca gct tct aca tgg aaa att			13810
Gly Thr Asp Val Phe Ser Ser Phe His Ala Ala Ser Thr Trp Lys Ile			
445	450	455	
ctt caa gac ttt tac att ggt gac gtg gag agg gtg gag ccg act cca			13858
Leu Gln Asp Phe Tyr Ile Gly Asp Val Glu Arg Val Glu Pro Thr Pro			
460	465	470	
gag ctg ctg aaa gat ttc cga gaa atg aga gct ctt ttc ctg agg gag			13906
Glu Leu Leu Lys Asp Phe Arg Glu Met Arg Ala Leu Phe Leu Arg Glu			
475	480	485	
caa ctt ttc aaa agt tcg aaa ttg tac tat gtt atg aag ctg ctc acg			13954
Gln Leu Phe Lys Ser Ser Lys Leu Tyr Tyr Val Met Lys Leu Leu Thr			
490	495	500	
aat gtt gct att ttt gct gcg agc att gca ata ata tgt tgg agc aag			14002
Asn Val Ala Ile Phe Ala Ala Ser Ile Ala Ile Ile Cys Trp Ser Lys			
505	510	515	520
act att tca gcg gtt ttg gct tca gct tgt atg atg gct ctg tgt ttc			14050
Thr Ile Ser Ala Val Leu Ala Ser Ala Cys Met Met Ala Leu Cys Phe			
525	530	535	
caa cag tgc gga tgg cta tcc cat gat ttt ctc cac aat cag gtg ttt			14098
Gln Gln Cys Gly Trp Leu Ser His Asp Phe Leu His Asn Gln Val Phe			
540	545	550	
gag aca cgc tgg ctt aat gaa gtt gtc ggg tat gtg atc ggc aac gcc			14146
Glu Thr Arg Trp Leu Asn Glu Val Val Gly Tyr Val Ile Gly Asn Ala			
555	560	565	

gtt ctg ggg ttt agt aca ggg tgg tgg aag gag aag cat aac ctt cat Val Leu Gly Phe Ser Thr Gly Trp Trp Lys Glu Lys His Asn Leu His 570 575 580	14194
cat gct gct cca aat gaa tgc gat cag act tac caa cca att gat gaa His Ala Ala Pro Asn Glu Cys Asp Gln Thr Tyr Gln Pro Ile Asp Glu 585 590 595 600	14242
gat att gat act ctc ccc ctc att gcc tgg agc aag gac ata ctg gcc Asp Ile Asp Thr Leu Pro Leu Ile Ala Trp Ser Lys Asp Ile Leu Ala 605 610 615	14290
aca gtt gag aat aag aca ttc ttg cga atc ctc caa tac cag cat ctg Thr Val Glu Asn Lys Thr Phe Leu Arg Ile Leu Gln Tyr Gln His Leu 620 625 630	14338
ttc ttc atg ggt ctg tta ttt ttc gcc cgt ggt agt tgg ctc ttt tgg Phe Phe Met Gly Leu Leu Phe Phe Ala Arg Gly Ser Trp Leu Phe Trp 635 640 645	14386
agc tgg aga tat acc tct aca gca gtg ctc tca cct gtc gac agg ttg Ser Trp Arg Tyr Thr Ser Thr Ala Val Leu Ser Pro Val Asp Arg Leu 650 655 660	14434
ttg gag aag gga act gtt ctg ttt cac tac ttt tgg ttc gtc ggg aca Leu Glu Lys Gly Thr Val Leu Phe His Tyr Phe Trp Phe Val Gly Thr 665 670 675 680	14482
gcg tgc tat ctt ctc cct ggt tgg aag cca tta gta tgg atg gcg gtg Ala Cys Tyr Leu Leu Pro Gly Trp Lys Pro Leu Val Trp Met Ala Val 685 690 695	14530
act gag ctc atg tcc ggc atg ctg ctg ggc ttt gta ttt gta ctt agc Thr Glu Leu Met Ser Gly Met Leu Leu Gly Phe Val Phe Val Leu Ser 700 705 710	14578
cac aat ggg atg gag gtt tat aat tcg tct aaa gaa ttc gtg agt gca His Asn Gly Met Glu Val Tyr Asn Ser Ser Lys Glu Phe Val Ser Ala 715 720 725	14626
cag atc gta tcc aca cgg gat atc aaa gga aac ata ttc aac gac tgg Gln Ile Val Ser Thr Arg Asp Ile Lys Gly Asn Ile Phe Asn Asp Trp 730 735 740	14674
ttc act ggt ggc ctt aac agg caa ata gag cat cat ctt ttc cca aca Phe Thr Gly Gly Leu Asn Arg Gln Ile Glu His His Leu Phe Pro Thr 745 750 755 760	14722
atg ccc agg cat aat tta aac aaa ata gca cct aga gtg gag gtg ttc Met Pro Arg His Asn Leu Asn Lys Ile Ala Pro Arg Val Glu Val Phe 765 770 775	14770
tgt aag aaa cac ggt ctg gtg tac gaa gac gta tct att gct acc ggc Cys Lys Lys His Gly Leu Val Tyr Glu Asp Val Ser Ile Ala Thr Gly 780 785 790	14818

act tgc aag gtt ttg aaa gca ttg aag gaa gtc gcg gag gct gcg gca	14866
Thr Cys Lys Val Leu Lys Ala Leu Lys Glu Val Ala Glu Ala Ala Ala	
795	800
805	
gag cag cat gct acc acc agt taa gctagcgtaa accctgcttt aatgagat	14920
Glu Gln His Ala Thr Thr Ser	
810	815
gcgagacgcc tatgatcgca tgatattgc tttcaattct gttgtgcacg ttgtaaaaaa	14980
cctgagcatg ttagctcgat atcccttaccg ccggtttcgg ttcattctaa tgaatatac	15040
acccgtaact atcgatattt tatgaataat attctccgtt caatttactg attgtccgtc	15100
gagcaaattt acacattgcc actaaacgtc taaacccttg taatttgtt ttgtttact	15160
atgtgtgtta tggatattgat ttgcgataaa ttttatatt tggtaactaa tttataacac	15220
cttttatgct aacgtttgcc aacacttagc aatttgcagg ttgattaatt gattctaaat	15280
tattttgc ttctaaatac atatactaata caactggaaa tgtaatatt tgctaatatt	15340
tctactatag gagaattaaa gtgagtgaaat atggtaaccac aaggtttggaa gatttaattt	15400
ttgcaatgct gcatggatgg catatacacc aaacattcaa taattcttgc ggataataat	15460
ggtaccacac aagatttgag gtgcgtgaaac gtcacgtggaa caaaagggtt agtaatttt	15520
caagacaaca atgttaccac acacaagttt tgaggtgcac gcatggatgc cctgtggaaa	15580
gtttaaaaat attttggaaa tgatggat ggaagccatg tgtaaaacca tgacatccac	15640
ttggaggatg caataatgaa gaaaactaca aatttacatg caactagtt tgcatgtat	15700
ctatataatg aggattttgc aataactttca ttccatcacaca ctcactaagt tttacacgt	15760
tataatttct tcatagccag cagatctaaa atg gct ccg gat gcg gat aag ctt	15814
Met Ala Pro Asp Ala Asp Lys Leu	
820	
cga caa cgc cag acg act gcg gta gcg aag cac aat gct gct acc ata	15862
Arg Gln Arg Gln Thr Thr Ala Val Ala Lys His Asn Ala Ala Thr Ile	
825	830
835	
tcg acg cag gaa cgc ctt tgc agt ctg tct tcg ctc aaa ggc gaa gaa	15910
Ser Thr Gln Glu Arg Leu Cys Ser Leu Ser Ser Leu Lys Gly Glu Glu	
840	845
850	855
gtc tgc atc gac gga atc atc tat gac ctc caa tca ttc gat cat ccc	15958
Val Cys Ile Asp Gly Ile Ile Tyr Asp Leu Gln Ser Phe Asp His Pro	
860	865
870	
ggg ggt gaa acg atc aaa atg ttt ggt ggc aac gat gtc act gta cag	16006
Gly Gly Glu Thr Ile Lys Met Phe Gly Gly Asn Asp Val Thr Val Gln	
875	880
885	
tac aag atg att cac ccg tac cat acc gag aag cat ttg gaa aag atg	16054

Tyr Lys Met Ile His Pro Tyr His Thr Glu Lys His Leu Glu Lys Met			
890	895	900	
aag cgt gtc ggc aag gtg acg gat ttc gtc tgc gag tac aag ttc gat		16102	
Lys Arg Val Gly Lys Val Thr Asp Phe Val Cys Glu Tyr Lys Phe Asp			
905	910	915	
acc gaa ttt gaa cgc gaa atc aaa cga gaa gtc ttc aag att gtg cga		16150	
Thr Glu Phe Glu Arg Glu Ile Lys Arg Glu Val Phe Lys Ile Val Arg			
920	925	930	935
cga ggc aag gat ttc ggt act ttg gga tgg ttc cgt gcg ttt tgc		16198	
Arg Gly Lys Asp Phe Gly Thr Leu Gly Trp Phe Phe Arg Ala Phe Cys			
940	945	950	
tac att gcc att ttc ttc tac ctg cag tac cat tgg gtc acc acg gga		16246	
Tyr Ile Ala Ile Phe Phe Tyr Leu Gln Tyr His Trp Val Thr Thr Gly			
955	960	965	
acc tct tgg ctg ctg gcc gtc gcc tac gga atc tcc caa gcg atg att		16294	
Thr Ser Trp Leu Leu Ala Val Ala Tyr Gly Ile Ser Gln Ala Met Ile			
970	975	980	
ggc atg aat gtc cag cac gat gcc aac cac ggg gcc acc tcc aag cgt		16342	
Gly Met Asn Val Gln His Asp Ala Asn His Gly Ala Thr Ser Lys Arg			
985	990	995	
ccc tgg gtc aac gac atg cta ggc ctc ggt gcg gat ttt att ggt		16387	
Pro Trp Val Asn Asp Met Leu Gly Leu Gly Ala Asp Phe Ile Gly			
1000	1005	1010	
ggt tcc aag tgg ctc tgg cag gaa caa cac tgg acc cac cac gct		16432	
Gly Ser Lys Trp Leu Trp Gln Glu Gln His Trp Thr His His Ala			
1015	1020	1025	
tac acc aat cac gcc gag atg gat ccc gat agc ttt ggt gcc gaa		16477	
Tyr Thr Asn His Ala Glu Met Asp Pro Asp Ser Phe Gly Ala Glu			
1030	1035	1040	
cca atg ctc cta ttc aac gac tat ccc ttg gat cat ccc gct cgt		16522	
Pro Met Leu Leu Phe Asn Asp Tyr Pro Leu Asp His Pro Ala Arg			
1045	1050	1055	
acc tgg cta cat cgc ttt caa gca ttc ttt tac atg ccc gtc ttg		16567	
Thr Trp Leu His Arg Phe Gln Ala Phe Phe Tyr Met Pro Val Leu			
1060	1065	1070	
gct gga tac tgg ttg tcc gct gtc ttc aat cca caa att ctt gac		16612	
Ala Gly Tyr Trp Leu Ser Ala Val Phe Asn Pro Gln Ile Leu Asp			
1075	1080	1085	
ctc cag caa cgc ggc gca ctt tcc gtc ggt atc cgt ctc gac aac		16657	
Leu Gln Gln Arg Gly Ala Leu Ser Val Gly Ile Arg Leu Asp Asn			
1090	1095	1100	
gct ttc att cac tcg cga cgc aag tat gcg gtt ttc tgg cgg gct		16702	
Ala Phe Ile His Ser Arg Arg Lys Tyr Ala Val Phe Trp Arg Ala			

1105	1110	1115	
gtg tac att gcg gtg aac	gtg att gct ccg ttt	tac aca aac tcc	16747
Val Tyr Ile Ala Val Asn	Val Ile Ala Pro Phe	Tyr Thr Asn Ser	
1120	1125	1130	
ggc ctc gaa tgg tcc tgg	cgt gtc ttt gga aac	atc atg ctc atg	16792
Gly Leu Glu Trp Ser Trp	Arg Val Phe Gly Asn	Ile Met Leu Met	
1135	1140	1145	
ggt gtg gcg gaa tcg ctc	gcg ctg gcg gtc ctg	ttt tcg ttg tcg	16837
Gly Val Ala Glu Ser Leu	Ala Leu Ala Val Leu	Phe Ser Leu Ser	
1150	1155	1160	
cac aat ttc gaa tcc gcg	gat cgc gat ccg acc	gcc cca ctg aaa	16882
His Asn Phe Glu Ser Ala	Asp Arg Asp Pro Thr	Ala Pro Leu Lys	
1165	1170	1175	
aag acg gga gaa cca gtc	gac tgg ttc aag aca	cag gtc gaa act	16927
Lys Thr Gly Glu Pro Val	Asp Trp Phe Lys Thr	Gln Val Glu Thr	
1180	1185	1190	
tcc tgc act tac ggt gga	ttc ctt tcc ggt tgc	ttc acg gga ggt	16972
Ser Cys Thr Tyr Gly Gly	Phe Leu Ser Gly Cys	Phe Thr Gly Gly	
1195	1200	1205	
ctc aac ttt cag gtt gaa	cac cac ttg ttc cca	cgc atg agc agc	17017
Leu Asn Phe Gln Val Glu	His His Leu Phe Pro	Arg Met Ser Ser	
1210	1215	1220	
gct tgg tat ccc tac att	gcc ccc aag gtc cgc	gaa att tgc gcc	17062
Ala Trp Tyr Pro Tyr Ile	Ala Pro Lys Val Arg	Glu Ile Cys Ala	
1225	1230	1235	
aaa cac ggc gtc cac tac	gcc tac tac ccg tgg	atc cac caa aac	17107
Lys His Gly Val His Tyr	Ala Tyr Tyr Pro Trp	Ile His Gln Asn	
1240	1245	1250	
ttt ctc tcc acc gtc cgc	tac atg cac gcg gcc	ggg acc ggt gcc	17152
Phe Leu Ser Thr Val Arg	Tyr Met His Ala Ala	Gly Thr Gly Ala	
1255	1260	1265	
aac tgg cgc cag atg gcc	aga gaa aat ccc ttg	acc gga cgg gcg	17197
Asn Trp Arg Gln Met Ala	Arg Glu Asn Pro Leu	Thr Gly Arg Ala	
1270	1275	1280	
taa agatctgccg gcatcgatcc cggccatgg cctgcttaa tgagatatgc			17250
gagacgccta tgatcgatg atatttgctt tcaattctgt tgtgcacgtt	gtaaaaaacc		17310
tgagcatgtg tagctcagat ccttaccgccc ggtttcggtt cattctaattg	aatatatcac		17370
ccgttactat cgtattttta tgaataatat tctccgttca atttactgat	tgtccgtcga		17430
cgagctcggc gcgcctctag aggatcgatg aattcagatc ggctgagtgg	ctccttcaac		17490
gttgcgggttc tgtcagttcc aaacgtaaaaa cggcttgc cgcgtcatcg	gcgggggtca		17550

taacgtgact cccttaattc tccgctcatg atcagattgt cgtttccgc cttcagttta 17610
 aactatcagt gtttgacagg atatattggc gggtaaacct aagagaaaag agcgtttatt 17670
 agaataatcg gatatttaaa agggcgtgaa aaggtttac cttcgtccat ttgtatgtgc 17730
 atgccaacca cagggttccc ca 17752

<210> 20
 <211> 290
 <212> PRT
 <213> *Phaeodactylum tricornutum, Physcomitrella patens*

<400> 20

Met Glu Val Val Glu Arg Phe Tyr Gly Glu Leu Asp Gly Lys Val Ser
 1 5 10 15

Gln Gly Val Asn Ala Leu Leu Gly Ser Phe Gly Val Glu Leu Thr Asp
 20 25 30

Thr Pro Thr Thr Lys Gly Leu Pro Leu Val Asp Ser Pro Thr Pro Ile
 35 40 45

Val Leu Gly Val Ser Val Tyr Leu Thr Ile Val Ile Gly Gly Leu Leu
 50 55 60

Trp Ile Lys Ala Arg Asp Leu Lys Pro Arg Ala Ser Glu Pro Phe Leu
 65 70 75 80

Leu Gln Ala Leu Val Leu Val His Asn Leu Phe Cys Phe Ala Leu Ser
 85 90 95

Leu Tyr Met Cys Val Gly Ile Ala Tyr Gln Ala Ile Thr Trp Arg Tyr
 100 105 110

Ser Leu Trp Gly Asn Ala Tyr Asn Pro Lys His Lys Glu Met Ala Ile
 115 120 125

Leu Val Tyr Leu Phe Tyr Met Ser Lys Tyr Val Glu Phe Met Asp Thr
 130 135 140

Val Ile Met Ile Leu Lys Arg Ser Thr Arg Gln Ile Ser Phe Leu His
 145 150 155 160

Val Tyr His His Ser Ser Ile Ser Leu Ile Trp Trp Ala Ile Ala His
 165 170 175

His Ala Pro Gly Gly Glu Ala Tyr Trp Ser Ala Ala Leu Asn Ser Gly
 180 185 190

Val His Val Leu Met Tyr Ala Tyr Tyr Phe Leu Ala Ala Cys Leu Arg
 195 200 205

Ser Ser Pro Lys Leu Lys Asn Lys Tyr Leu Phe Trp Gly Arg Tyr Leu
 210 215 220

Thr Gln Phe Gln Met Phe Gln Phe Met Leu Asn Leu Val Gln Ala Tyr
 225 230 235 240

Tyr Asp Met Lys Thr Asn Ala Pro Tyr Pro Gln Trp Leu Ile Lys Ile
 245 250 255

Leu Phe Tyr Tyr Met Ile Ser Leu Leu Phe Leu Phe Gly Asn Phe Tyr
 260 265 270

Val Gln Lys Tyr Ile Lys Pro Ser Asp Gly Lys Gln Lys Gly Ala Lys
 275 280 285

Thr Glu
 290

<210> 21
 <211> 525
 <212> PRT
 <213> *Phaeodactylum tricornutum, Physcomitrella patens*

<400> 21

Met Val Phe Ala Gly Gly Gly Leu Gln Gln Gly Ser Leu Glu Glu Asn
 1 5 10 15

Ile Asp Val Glu His Ile Ala Ser Met Ser Leu Phe Ser Asp Phe Phe
 20 25 30

Ser Tyr Val Ser Ser Thr Val Gly Ser Trp Ser Val His Ser Ile Gln
 35 40 45

Pro Leu Lys Arg Leu Thr Ser Lys Lys Arg Val Ser Glu Ser Ala Ala
 50 55 60

Val Gln Cys Ile Ser Ala Glu Val Gln Arg Asn Ser Ser Thr Gln Gly
 65 70 75 80

Thr Ala Glu Ala Leu Ala Glu Ser Val Val Lys Pro Thr Arg Arg Arg
 85 90 95

Ser Ser Gln Trp Lys Lys Ser Thr His Pro Leu Ser Glu Val Ala Val
 100 105 110

His Asn Lys Pro Ser Asp Cys Trp Ile Val Val Lys Asn Lys Val Tyr
 115 120 125

Asp Val Ser Asn Phe Ala Asp Glu His Pro Gly Gly Ser Val Ile Ser
 130 135 140

Thr Tyr Phe Gly Arg Asp Gly Thr Asp Val Phe Ser Ser Phe His Ala
 145 150 155 160

Ala Ser Thr Trp Lys Ile Leu Gln Asp Phe Tyr Ile Gly Asp Val Glu
 165 170 175

Arg Val Glu Pro Thr Pro Glu Leu Leu Lys Asp Phe Arg Glu Met Arg
 180 185 190

Ala Leu Phe Leu Arg Glu Gln Leu Phe Lys Ser Ser Lys Leu Tyr Tyr
 195 200 205

Val Met Lys Leu Leu Thr Asn Val Ala Ile Phe Ala Ala Ser Ile Ala
 210 215 220

Ile Ile Cys Trp Ser Lys Thr Ile Ser Ala Val Leu Ala Ser Ala Cys
 225 230 235 240

Met Met Ala Leu Cys Phe Gln Gln Cys Gly Trp Leu Ser His Asp Phe
 245 250 255

Leu His Asn Gln Val Phe Glu Thr Arg Trp Leu Asn Glu Val Val Gly
 260 265 270

Tyr Val Ile Gly Asn Ala Val Leu Gly Phe Ser Thr Gly Trp Trp Lys
 275 280 285

Glu Lys His Asn Leu His His Ala Ala Pro Asn Glu Cys Asp Gln Thr
 290 295 300

Tyr Gln Pro Ile Asp Glu Asp Ile Asp Thr Leu Pro Leu Ile Ala Trp
 305 310 315 320

Ser Lys Asp Ile Leu Ala Thr Val Glu Asn Lys Thr Phe Leu Arg Ile
 325 330 335

Leu Gln Tyr Gln His Leu Phe Phe Met Gly Leu Leu Phe Phe Ala Arg
 340 345 350

Gly Ser Trp Leu Phe Trp Ser Trp Arg Tyr Thr Ser Thr Ala Val Leu
 355 360 365

Ser Pro Val Asp Arg Leu Leu Glu Lys Gly Thr Val Leu Phe His Tyr
 370 375 380

Phe Trp Phe Val Gly Thr Ala Cys Tyr Leu Leu Pro Gly Trp Lys Pro
 385 390 395 400

Leu Val Trp Met Ala Val Thr Glu Leu Met Ser Gly Met Leu Leu Gly
 405 410 415

Phe Val Phe Val Leu Ser His Asn Gly Met Glu Val Tyr Asn Ser Ser
 420 425 430

Lys Glu Phe Val Ser Ala Gln Ile Val Ser Thr Arg Asp Ile Lys Gly
 435 440 445

Asn Ile Phe Asn Asp Trp Phe Thr Gly Gly Leu Asn Arg Gln Ile Glu
 450 455 460

His His Leu Phe Pro Thr Met Pro Arg His Asn Leu Asn Lys Ile Ala
 465 470 475 480

Pro Arg Val Glu Val Phe Cys Lys Lys His Gly Leu Val Tyr Glu Asp
 485 490 495

Val Ser Ile Ala Thr Gly Thr Cys Lys Val Leu Lys Ala Leu Lys Glu
 500 505 510

Val Ala Glu Ala Ala Ala Glu Gln His Ala Thr Thr Ser
 515 520 525

<210> 22
 <211> 469
 <212> PRT
 <213> *Phaeodactylum tricornutum, Physcomitrella patens*
 <400> 22

Met Ala Pro Asp Ala Asp Lys Leu Arg Gln Arg Gln Thr Thr Ala Val
 1 5 10 15

Ala Lys His Asn Ala Ala Thr Ile Ser Thr Gln Glu Arg Leu Cys Ser
 20 25 30

Leu Ser Ser Leu Lys Gly Glu Glu Val Cys Ile Asp Gly Ile Ile Tyr
 35 40 45

Asp Leu Gln Ser Phe Asp His Pro Gly Gly Glu Thr Ile Lys Met Phe
 50 55 60

Gly Gly Asn Asp Val Thr Val Gln Tyr Lys Met Ile His Pro Tyr His
 65 70 75 80

Thr Glu Lys His Leu Glu Lys Met Lys Arg Val Gly Lys Val Thr Asp
 85 90 95

Phe Val Cys Glu Tyr Lys Phe Asp Thr Glu Phe Glu Arg Glu Ile Lys
 100 105 110

Arg Glu Val Phe Lys Ile Val Arg Arg Gly Lys Asp Phe Gly Thr Leu
 115 120 125

Gly Trp Phe Phe Arg Ala Phe Cys Tyr Ile Ala Ile Phe Phe Tyr Leu
 130 135 140

Gln Tyr His Trp Val Thr Thr Gly Thr Ser Trp Leu Leu Ala Val Ala
 145 150 155 160

Tyr Gly Ile Ser Gln Ala Met Ile Gly Met Asn Val Gln His Asp Ala
 165 170 175

Asn His Gly Ala Thr Ser Lys Arg Pro Trp Val Asn Asp Met Leu Gly
 180 185 190

Leu Gly Ala Asp Phe Ile Gly Gly Ser Lys Trp Leu Trp Gln Glu Gln
 195 200 205

His Trp Thr His His Ala Tyr Thr Asn His Ala Glu Met Asp Pro Asp
 210 215 220

Ser Phe Gly Ala Glu Pro Met Leu Leu Phe Asn Asp Tyr Pro Leu Asp
 225 230 235 240

His Pro Ala Arg Thr Trp Leu His Arg Phe Gln Ala Phe Phe Tyr Met
 245 250 255

Pro Val Leu Ala Gly Tyr Trp Leu Ser Ala Val Phe Asn Pro Gln Ile
 260 265 270

Leu Asp Leu Gln Gln Arg Gly Ala Leu Ser Val Gly Ile Arg Leu Asp
 275 280 285

Asn Ala Phe Ile His Ser Arg Arg Lys Tyr Ala Val Phe Trp Arg Ala
 290 295 300

Val Tyr Ile Ala Val Asn Val Ile Ala Pro Phe Tyr Thr Asn Ser Gly
 305 310 315 320

Leu Glu Trp Ser Trp Arg Val Phe Gly Asn Ile Met Leu Met Gly Val
 325 330 335

Ala Glu Ser Leu Ala Leu Ala Val Leu Phe Ser Leu Ser His Asn Phe
 340 345 350

Glu Ser Ala Asp Arg Asp Pro Thr Ala Pro Leu Lys Lys Thr Gly Glu
 355 360 365

Pro Val Asp Trp Phe Lys Thr Gln Val Glu Thr Ser Cys Thr Tyr Gly
 370 375 380

Gly Phe Leu Ser Gly Cys Phe Thr Gly Gly Leu Asn Phe Gln Val Glu
 385 390 395 400

His His Leu Phe Pro Arg Met Ser Ser Ala Trp Tyr Pro Tyr Ile Ala
 405 410 415

Pro Lys Val Arg Glu Ile Cys Ala Lys His Gly Val His Tyr Ala Tyr
 420 425 430

Tyr Pro Trp Ile His Gln Asn Phe Leu Ser Thr Val Arg Tyr Met His
 435 440 445

Ala Ala Gly Thr Gly Ala Asn Trp Arg Gln Met Ala Arg Glu Asn Pro
 450 455 460

Leu Thr Gly Arg Ala
 465

<210> 23
 <211> 26
 <212> DNA
 <213> artificial sequence

<220>
 <221> misc_feature
 <222> (1)..(26)
 <223> polylinker sequence

<400> 23
 gaattcggcg cggccggctc ctcgag 26

<210> 24
 <211> 265
 <212> DNA
 <213> artificial sequence

<220>
 <221> misc_feature
 <222> (1)..(265)
 <223> polylinker-terminator-polylinkers sequence

<400> 24
 ccaccgcgggt gggcgccgc ctgcagtcta gaaggcctcc tgctttaatg agatatgcga 60
 gacgcctatg atcgcatgat atttgcttgc aattctgttg tgcacgttgt aaaaaacctg 120
 agcatgtgta gctcagatcc ttaccgcccgg tttcgggtca ttctaatgaa tatatcaccc 180
 gttactatcg tattttatg aataatattc tccgttcaat ttactgattg tccgtcgacg 240
 aattcgagct cggcgccca agctt 265

<210> 25

<211> 257
 <212> DNA
 <213> artificial sequence

 <220>
 <221> misc_feature
 <222> (1)..(257)
 <223> polylinker-terminator-polylinkers sequence

<400> 25
 ggatccgata tcgggcccgc tagcgtaac cctgcttaa tgagatatgc gagacgccta 60
 tgatcgcatg atatttgctt tcaattctgt tgtgcacgtt gtaaaaaacc tgagcatgtg 120
 tagctcagat ccttaccgccc ggtttcgggtt cattctaattg aatataatcac ccgttactat 180
 cgtatttta tgaataataat tctccgttca atttactgat tgtccgtcga cgaattcggag 240
 ctcggcgcgcaagctt 257

<210> 26
 <211> 5410
 <212> DNA
 <213> artificial sequence

 <220>
 <221> misc_feature
 <222> (1)..(5410)
 <223> plant expression vector with one promoter-terminator expression cassette

<400> 26
 tttggaaat gatttgcattt gaaaggcatgt gtaaaaaccat gacatccact tggaggatgc 60
 aataatgaag aaaactacaa atttacatgc aactagttat gcatgttagtc tatataatga 120
 ggatttgca atactttcat tcatacacac tcactaagtt ttacacgatt ataatttctt 180
 catagccagc ggatccgata tcgggcccgc tagcgtaac cctgcttaa tgagatatgc 240
 gagacgccta tgatcgcatg atatttgctt tcaattctgt tgtgcacgtt gtaaaaaacc 300
 tgagcatgtg tagctcagat ccttaccgccc ggtttcgggtt cattctaattg aatataatcac 360
 ccgttactat cgtatttta tgaataataat tctccgttca atttactgat tgtccgtcga 420
 gcaaatttac acattgccac taaacgtcta aacccttgcattt gttttactat 480
 gtgtgttatg tatttgattt gcgataaatt tttatatttg gtactaaatt tataacacct 540
 tttatgctaa cgtttgccaa cacttagcaa tttgcaagtt gattaattga ttctaaatta 600
 tttttgtctt ctaaatacat atactaatca actggaaatg taaatatttg ctaatatttc 660
 tactatagga gaattaaagt gagtgaatat ggtaccacaa ggtttggaga tttaattgtt 720

gcaatgctgc atggatggca tatacaccaa acatccaata attcttgagg ataataatgg	780
taccacacaa gatttgaggt gcatgaacgt cacgtggaca aaaggtagt taattttca	840
agacaacaat gttaccacac acaagtttg aggtgcacgc atggatgccc tgtggaaagt	900
ttaaaaatat ttggaaatg atttgcacgg aagccatgtg taaaaccatg acatccactt	960
ggaggatgca ataatgaaga aaactacaaa tttacatgca actagttatg catgtatgt	1020
atataatgag gatttgcaa tacttcatt catacacact cactaagtt tacacgatta	1080
taatttcttc atagccagca gatctgccc gatcgatccc gggccatggc ctgcttaat	1140
gagatatgctg agacgcctat gatcgcatga tatttgctt caattctgtt gtgcacgtt	1200
taaaaaacctt gagcatgtgt agctcagatc cttaccggcg gtttcgggttc attctaata	1260
atataatcacc cgttactatc gtattttat gaataatatt ctccgttcaa tttactgatt	1320
gtccgtcgac gagctcgccg cggcaagctt ggcgtaatca tggtcatacg tggccctgt	1380
gtgaaattgt tatccgctca caattccaca caacatacga gccggaagca taaagtgtaa	1440
agcctgggt gcctaatacg ttagcttaact cacatattt gcgttgcgt cactgcccgc	1500
tttccagtcg ggaaacctgt cgtgccagct gcatataatga atcggccaac ggcggggag	1560
aggccgggtt cgtattggc gctctccgc ttcctcgctc actgactcg tgcgctcggt	1620
cgttcggctg cggcgagcgg tatcagctca ctcaaaggcg gtaatacggt tatccacaga	1680
atcagggat aacgcaggaa agaacatgtg agcaaaaggc cagcaaaagg ccaggaaccg	1740
taaaaaggcc gcgttgctgg cgttttcca taggctccgc cccctgacg agcatcaca	1800
aaatcgacgc tcaagtcaga ggtggcgaaa cccgacagga ctataaagat accaggcg	1860
tccccctgga agctccctcg tgcgctctcc tggccgacc ctgcccgtt ccggataacct	1920
gtccgcctt ctcccttcgg gaagcgtggc gctttctcat agtcacgtt gtaggtatct	1980
cagttcggtg taggtcggtc gctccaagct gggctgtgtg cacgaacccc cggccatcg	2040
cgaccgctgc gccttatccg gtaactatcg tcttgagtcc aaccggtaa gacacgactt	2100
atcgccactg gcagcagcca ctggtaacag gattgcaga gcgaggtatg taggcgggtc	2160
tacagagttc ttgaagtggt ggccctaacta cggctacact agaaggacag tatttggtat	2220
ctgcgtctg ctgaagccag ttaccttcgg aaaaagagtt ggtagctttt gatccggcaa	2280
acaaaccacc gctggtagcg gtggttttt tgtttgcag cagcagatca cggccagaaa	2340

aaaaggatct caagaagatc	cttgatctt ttctacgggg	tctgacgctc	agtggAACGA	2400
aaactcacgt taagggattt	tggcatgag attatcaaaa	aggatcttca	cctagatcct	2460
ttaaattaa aatgaagtt	ttaaatcaat ctaaagtata	tatgagtaaa	cttggctga	2520
cagttaccaa tgcttaatca	gtgaggcacc tatctcagcg	atctgtctat	ttcggtcatc	2580
catagttgcc tgactccccg	tctgttagat aactacgata	cgggaggggct	taccatctgg	2640
ccccagtgct gcaatgatac	cgcgagaccc acgctcaccg	gctccagatt	tatcagcaat	2700
aaaccagcca gccggaaggg	ccgagcgcag aagtggctt	gcaactttat	ccgcctccat	2760
ccagtctatt aattgttgcc	gggaagctag agtaagtagt	tcgccagtt	atagtttgcg	2820
caacggtgtt gccattgcta	caggcacatcggtt	gggtcacgc	tcgtcggtt	2880
attcagctcc ggttcccaac	gatcaaggcg agttacatga	tcccccattgt	tgtgcaaaaa	2940
agcggttagc tccttcggtc	ctccgatcggtt	tgtcagaagt	aagttggccg	3000
actcatggtt atggcagcac	tgcataattt	tcttactgtc	atgccatccg	3060
ttctgtgact ggtgagttact	caaccaagtc attctgagaa	tagtgtatgc	ggcgaccgag	3120
ttgctcttgc cggcgtaa	tacggataa taccgcgcca	catagcagaa	ctttaaaagt	3180
gctcatcatt gaaaaacgtt	cttcggggcg	aaaactctca	aggatcttac	3240
atccagttcg atgtaaccca	ctcgtgcacc	caactgatct	tcagcatctt	3300
cagcgtttct gggtgagcaa	aaacaggaag	gcaaaatgcc	gaaaaaaagg	3360
gacacggaaa tggtgaatac	tcatactctt	ccttttcaa	tattattgaa	3420
gggttattgt ctcatgagcg	gatacatatt	tgaatgtatt	tagaaaaata	3480
ggtccgcgc acatcccc	gaaaagtgcc	acctgacgtc	taagaaacca	3540
gacattaacc tataaaaata	ggcgtatcac	gaggccctt	cgtctcgcc	3600
tgacggtgaa aacctctgac	acatgcagct	cccgagacg	gtcacagctt	3660
ggatgccggg agcagacaag	cccgtcaggg	cgcgtcagcg	ggtgttgccg	3720
ctggcttaac tatgcggcat	cagagcagat	tgtactgaga	gtgcaccata	3780
aataccgcac agatgcgtaa	ggagaaaata	ccgcatcagg	cgccattcgc	3840
gcgcaactgt tgggaagggc	gatcggtgcg	ggcctttcg	ctattacgcc	3900
agggggatgt gctgcaaggc	gattaagttg	ggtaacgcc	gggtttccc	3960
ttgtaaaaacg acggccagtg	aattcggcgc	gccgagctcc	tcgagcaaatt	4020
ccactaaacg tctaaaccct	tgtattttgt	ttttgtttta	ctatgtgtgt	4080

atttgcata aattttata ttggtaacta aatttataac acctttatg .ctaacgttg	4140
ccaacactta gcaatttgca agttgattaa ttgattctaa attattttg tcttctaaat	4200
acatatactacta atcaactgga aatgtaaata tttgctaata tttctactat aggagaatta	4260
aagtgagtga atatggtacc acaaggttt gaggattaat tggcaatg ctgcattggat	4320
ggcatataca ccaaacattc aataattctt gaggataata atggtaccac acaagattt	4380
aggtgcatga acgtcacgtg gacaaaaggt ttagtaattt ttcaagacaa caatgttacc	4440
acacacaagt tttgaggtgc atgcattggat gcccgttgc aagttaaaaa atattttgg	4500
aatgatttgc atggaagcca tggtaaaaac catgacatcc acttggagga tgcaataatg	4560
aagaaaacta caaatttaca tgcaactagt tatgcattgt gtctatataa tgaggattt	4620
gcaataacttt cattcataca cactcactaa gtttacacg attataattt ctcatagcc	4680
agcccaccgc ggtggcgcc cgccctgcagt ctggaggcc tcctgctta atgagatatg	4740
cgagacgcct atgatcgcat gatatttgct ttcaattctg ttgtgcacgt tgtaaaaaac	4800
ctgagcatgt gtagctcaga tccttaccgc cggttcgggt tcattctaat gaatatatca	4860
cccgttacta tcgtatTTT atgaataata ttctccgttc aatttactga ttgtccgtcg	4920
agcaaatttac cacattgcca ctaaacgtct aaacccttgc aatttgcattt tgtttacta	4980
tgtgtgttat gtatttgatt tgcgataaat ttatattt ggtactaaat ttataacacc	5040
tttatgtcta acgtttgcca acacttagca atttgcagaat tgattatgt attctaaatt	5100
atTTTgtct tctaaataca tatactaattc aactggaaat gtaaatattt gctaatattt	5160
ctactatagg agaattaaag tgagtgaata tggtaaccaca aggtttggag atttaattgt	5220
tgcaatgctg catggatggc atatacacca aacattcaat aattcttgc gataataatg	5280
gtaccacaca agatttgagg tgcgtacacg tcacgtggac aaaaggttta gtaatTTT	5340
aagacaacaa tgttaccaca cacaagttt gaggtgcattt catggatgcc ctgtggaaag	5400
tttaaaaaata	5410

<210> 27
 <211> 12093
 <212> DNA
 <213> artificial sequence

<220>
 <221> misc_feature
 <222> (1)..(12093)

<223> plant expression vector with one promoter-terminator expression cassette

<400> 27
gatctggcgc cgcccagcga gacgagcaag attggccgcc gcccggaaacg atccgacacgc 60
gcccggccagca caggtgcgcga ggcaaattgc accaacgcac acagcgccag cagaatgcca 120
tagtggccgg tgacgtcggt cgagtgaacc agatcgccga ggaggcccg cagcaccggc 180
ataatcaggc cgatgccgac agcgctcgagc gcgacagtgc tcagaattac gatcagggg 240
atgttgggtt tcacgtctgg cctccggacc agcctccgct ggtccgattg aacgcgcgga 300
ttctttatca ctgataagtt ggtggacata ttatgtttat cagtgataaa gtgtcaagca 360
tgacaaagtt gcagccgaat acagtgatcc gtgccgcct ggacctgtt aacgaggctcg 420
gcgttagacgg tctgacgaca cgcaaactgg cggaacgggtt gggggttcag cagccggcgc 480
tttactggca cttaggaac aagcgggcgc tgctcgacgc actggccgaa gccatgctgg 540
cggagaatca tacgcattcg gtgccgagag ccgacgacga ctggcgctca tttctgatcg 600
ggaatgccc cagttcagg caggcgctgc tcgcctaccg cgatggcgcg cgcatccatg 660
ccggcacgcg accggcgca ccgcagatgg aaacggccga cgccgagctt cgttccct 720
gcgaggccgg ttttcggcc ggggacgccc tcaatgcgt gatgacaatc agctacttca 780
ctgttgggc cgtgcttgag gagcaggccg ggcacagcga tgccggcgag cgccggcggca 840
ccgttgaaca ggctccgctc tcgcccgtgt tgccggccgc gatagacgcc ttgcacgaag 900
ccggtccgga cgccgcgttc gagcaggac tcgcgggtat tgtcgatgga ttggcgaaaa 960
ggaggctcgt tgtcaggaac gttgaaggac cgagaaagg tgacgattga tcaggaccgc 1020
tgccggagcg caacccactc actacagcag agccatgtag acaacatccc ctccccctt 1080
ccaccgcgtc agacgcccgt agcagccgc tacggcttt ttcatgcctt gcccgtcg 1140
ccaaggcctca cggccgcgtc cggcctctc ggcggccttc tggcgcttt ccgttcctc 1200
gctcaactgac tcgctgcgtc cggtcggtcg gtcgcggcga gcggtatcag ctcactcaaa 1260
ggcggtaata cggttatcca cagaatcagg ggataacgcga ggaaagaaca tgtgagcaaa 1320
aggccagcaa aaggccagga accgtaaaaaa ggccgcgttg ctggcggttt tccataggct 1380
ccgccccctt gacgagcattc acaaaaaatcg acgctcaagt cagaggtggc gaaacccgac 1440
aggactataa agataccagg cgttcccccc tggaaagctcc ctcgtgcgtc ctccgttcc 1500
gaccctgccc cttaccggat acctgtccgc ctttccctt tcggaaagcg tggcggtttt 1560
ccgctgcata accctgcttc ggggtcatta tagcgatttt ttcggatataatccatcccttt 1620

tcgcacgata tacaggattt tgccaaagggtt	1680
ggcgtcagcc gggcaggata ggtgaagtag gcccacccgc	1740
ctgtccctta ttgcacccctg gcgggtctca acgggaatcc	1800
ctaccgcccgg cgtaacagat gagggcaagc ggtatggctga	1860
aggcagccc acctatcaag gtgtactgcc ttccagacga	1920
aggcggccggc ggccggcatg agcctgtcgg cctacctgct	1980
aaatcacggg cgtcgtggac tatgagcacg tccgcgagct	2040
tggccgcctt gggccgcctg ctgaaactct ggctcaccga	2100
tcgggtatgc cacgatccctc gccctgctgg cgaagatcga	2160
gcaagggtcat gatggggcgtg gtccgccccga gggcagagcc	2220
aacggccggg ggggtgcgcgt gattgccaag cacgtccccat	2280
gacttcgcgg agctggtgaa gtacatcacc gacgagcaag	2340
gacgctcacc gggctggttg ccctcgccgc tgggctggcg	2400
cgcgccagaa acgcccgtcga agccgtgtgc gagacaccgc	2460
cctcgcggaa aacttggccc tcactgacag atgaggggcg	2520
cgactcaccc ggcgcggcgt tgacagatga ggggcaggct	2580
gagctggcca gcctcgcaaa tcggcgaaaa cgcctgattt	2640
gatgtggaca agcctgggta taagtgcctt gcggtattga	2700
tgacagatga ggggcgcgat cttgacact tgagggcag	2760
gcacctattt acatttgagg ggctgtccac aggcagaaaa	2820
ccggccgttt ttcggccacc gctaacctgt cttaaacctt	2880
aaaccttggtt tttaaccagg gctgcgcctt gtgcgcgtga	2940
tgccccccct tctcgaaaccc tcccgccccg ctaacgcggg	3000
tgcgcgcctc ggccgcgaac ggccctcaccc caaaaatggc	3060
ttgcccggat cggggcagta acgggatggg cgatcagccc	3120
ttgacgtgcc gcaggtgctg gcatcgacat tcagcgacca	3180
gcggcctggg tggccgcctg cccttcactt cggccgtcgg	3240
cgggggccggc aatttttacc ttggcatttgc ttggcatagt	3300

tgttcgaaaaac ccagcgaacc atttgagggtg ataggtaaga ttataccgag 3360
gtatgaaaac gagaattgga ccttacaga attactctat gaagcgccat atttaaaaag 3420
ctaccaagac gaagaggatg aagaggatga ggaggcagat tgccttgaat atattgacaa 3480
tactgataag ataatatatc ttttatata tag aagatatcgc cgtatgtaa gatttcaggg 3540
ggcaaggcat aggcagcgcg cttatcaata tatctataga atgggcaaag cataaaaact 3600
tgcattgact aatgcttgc acccaggaca ataaccctt agcttgcataa ttctatcata 3660
attggtaat gactccaact tattgatagt gtttatgtt cagataatgc ccgatgactt 3720
tgtcatgcag ctccaccgat tttgagaacg acagcgactt ccgtcccagc cgtgccaggt 3780
gctgcctcag attcaggtta tgccgctcaa ttcgctgcgt atatcgcttgc tgcattacgt 3840
gcagcttcc ctccaggcgg gattcataca gcggccagcc atccgtcatc catatcacca 3900
cgtcaaagg tgacagcagg ctcataagac gccccagcgt cgccatagtg cggtcaccga 3960
atacgtgcgc aacaaccgtc ttccggagac tgtcatacgc gtaaaacagc cagcgctggc 4020
gcgatttagc cccgacatag ccccaactgtt cgtccatttc cgccagacg atgacgtcac 4080
tgcccgctg tatgcgcgag gttaccgact gcggcctgag ttttttaagt gacgtaaaat 4140
cgtgttgcagg ccaacgccc taatgcggc tggccggc catccaacgc cattcatggc 4200
catatcaatg attttctggt gcgtaccggg ttgagaagcg gtgttaagtga actgcagttg 4260
ccatgtttta cggcagtgc agcagagata gcgcgtatgt ccggcggtgc ttttgcgtt 4320
acgcaccacc ccgtcagtag ctgaacagga gggacagctg atagacacag aagccactgg 4380
agcacctcaa aaacaccatc atacaactaaa tcagtaagtt ggcagcatca cccataattg 4440
tggtttcaaa atcggtccg tcgataactat gttatcgc aactttgaaa acaactttga 4500
aaaagctgtt ttctggatt taagggttta gaatgcaagg aacagtgaat tggagttcgt 4560
cttgcgttataa ttagcttctt ggggtatctt taaatactgt agaaaagagg aaggaaataa 4620
taaatggcta aaatgagaat atcaccggaa ttgaaaaaac tgatcgaaaa ataccgctgc 4680
gtaaaaagata cggaaggaat gtctcctgct aaggtatata agctggtggg agaaaatgaa 4740
aacctatatt taaaaatgac ggacagccgg tataaaggga ccacctatga tgtggAACGG 4800
gaaaaggaca tgatgctatg gctggaaagga aagctgcctg ttccaaaggt cctgcacttt 4860
gaacggcatg atggctggag caatctgctc atgagtgagg ccgtggcgt cctttgcgt 4920
gaagagatgt aagatgaaca aagccctgaa aagattatcg agctgtatgc ggagtgcatac 4980
aggcttttc actccatcga catatcgat tgcctata cgaatagctt agacagccgc 5040

ttagccgaat tggattactt actgaataac gatctggccg atgtggattg .cgaaaactgg	5100
gaagaagaca ctccattaa agatccgcgc gagctgtatg atttttaaa gacggaaaag	5160
cccgaaagg aacttgtctt ttcccacggc gacctggag acagcaacat ctttgtaaa	5220
gatggcaaag taagtggctt tattgtctt gggagaagcg gcagggcggg caagtggat	5280
gacattgcct tctgcgtccg gtcgatcagg gaggatatcg gggagaaca gtagtcgag	5340
ctattttg acttactgg gatcaagcct gattggaga aaataaaata ttatattta	5400
ctggatgaat tgtttagta cctagatgtg gcgcaacgat gccggcgaca agcaggagcg	5460
caccgacttc ttccgcatca agtgtttgg ctctcaggcc gaggcccacg gcaagtattt	5520
ggcaagggg tcgctggat tcgtgcagg caagattcg aataccaagt acgagaagga	5580
cggccagacg gtctacggg ccgacttcat tgccgataag gtggattatc tggacaccaa	5640
ggcaccaggc gggtaaaatc aggaataagg gcacattgcc cccgcgtgag tcggggcaat	5700
cccgcaagga gggtaatga atcggacgtt tgaccgaaag gcatacaggc aagaactgat	5760
cgacgcgggg tttccgccc aggatgccga aaccatcgca agccgcaccc tcatgcgtgc	5820
cccccgcaa accttccagt ccgtcggtc gatggtccag caagctacgg ccaagatcga	5880
gcgcgacagc gtgcaactgg ctccccctgc cctgcccgcg ccatcgcccg ccgtggagcg	5940
ttcgcgtcg tctgaacagg aggcggcagg tttggcgaag tcgatgacca tcgacacgcg	6000
aggaactatg acgaccaaga agcgaaaaac cgcggcgag gacctggcaa aacaggtcag	6060
cgaggccaag caggccgcgt tgctgaaaca cacgaagcag cagatcaagg aaatgcagct	6120
ttccttgttc gatattgcgc cgtggccggc cacgatgcga gcgatgccaa acgacacggc	6180
ccgctctgcc ctgttacca cgcgaaccaa gaaaatcccgcg cgcgaggcgc tgcaaaacaa	6240
ggtcattttc cacgtcaaca aggacgtgaa gatcacctac accggcgtcg agctgcggc	6300
cgacgatgac gaactgggt ggcagcaggt gttggagtac gcgaaagcgca cccctatcgg	6360
cgagccgatc accttacgt tctacgagct ttgccaggac ctggctggc cgatcaatgg	6420
ccggattac acgaaggccg aggaatgcct gtcgcgccta caggcgacgg cgatggctt	6480
cacgtccgac cgcgttggc acctgaaatc ggtgtcgctg ctgcaccgct tccgcgtcct	6540
ggaccgtggc aagaaaacgt cccgttgcca ggtcctgatc gacgaggaaa tcgtcgtgct	6600
gttgctggc gaccactaca cgaattcat atgggagaag taccgcaagc tgtcgcgc	6660
ggcccgacgg atgttcgact attcagctc gcaccggag ccgtacccgc tcaagctgga	6720

aaccttccgc	ctcatgtgcg	gatcgaggattc	cacccgcgtg	aagaagtggc	gcgagcaggt	6780
cggcgaagcc	tgcgaaagagt	tgcgaggcag	cggcctggtg	gaacacgcct	gggtcaatga	6840
tgacctggtg	cattgcaaac	gctagggcct	tgtgggtca	gttccggctg	ggggttcagc	6900
agccagcgct	ttactggcat	ttcaggaaca	agcgggcact	gctcgacgca	cttgcttcgc	6960
tcagtatcgc	tcgggacgca	cggcgcgctc	tacgaactgc	cgataaaacag	aggattaaaa	7020
ttgacaattg	tgattaaggc	tcagattcga	cggcttggag	cggccgacgt	gcaggatttc	7080
cgcgagatcc	gattgtcggc	cctgaagaaa	gctccagaga	tgttcgggtc	cgtttacgag	7140
cacgaggaga	aaaagcccat	ggaggcggttc	gctgaacggt	tgcgagatgc	cgtggcattc	7200
ggcgcctaca	tcgacggcga	gatcattggg	ctgtcggtct	tcaaacagga	ggacggcccc	7260
aaggacgctc	acaaggcgca	tctgtccggc	gttttcgtgg	agcccgaaaca	gcgaggccga	7320
ggggtcgccc	gtatgctgct	gcgggcgttg	ccggcgggtt	tattgctcgt	gatgatcgtc	7380
cgacagattc	caacggaaat	ctggtggtatg	cgcacattca	tcctcggcgc	acttaatatt	7440
tcgctattct	ggagcttgtt	gtttatttcg	gtctaccgccc	tgccgggcgg	ggtcgcggcg	7500
acggtaggcg	ctgtgcagcc	gctgtatggtc	gtgttcatct	ctgcccgtct	gctaggtagc	7560
ccgatacgt	tgatggcggt	cctgggggct	atttgcggaa	ctgcgggcgt	ggcgctgttg	7620
gtgttgacac	caaacgcagc	gctagatcct	gtcggcgctg	cagcgggcct	ggcggggcg	7680
gtttccatgg	cgttcggAAC	cgtgctgacc	cgcaagtggc	aacctcccgt	gcctctgctc	7740
acctttaccg	cctggcaact	ggcggccgg	ggacttctgc	tcgttccagt	agcttttagt	7800
tttgatccgc	caatcccgat	gcctacagga	accaatgttc	tcggcctggc	gtggctcgcc	7860
ctgatcgag	cgggttaac	ctacttcctt	tggttccggg	ggatctcgcg	actcgAACt	7920
acagttgttt	ccttactggg	ctttctcagc	cccagatctg	gggtcgatca	gccggggatg	7980
catcaggccg	acagtccgaa	cttcgggtcc	ccgacctgta	ccattcggtg	agcaatggat	8040
aggggagttg	atatcgtaa	cgttcaacttc	taaagaata	gcccactca	gtttcctcag	8100
cggctttatc	cagcgatttc	ctattatgtc	ggcatagttc	tcaagatcga	cagcctgtca	8160
cggtaagcg	agaaatgaat	aagaaggctg	ataattcgga	tctctgcgag	ggagatgata	8220
tttgatcaca	ggcagcaacg	ctctgtcatc	gttacaatca	acatgctacc	ctccgcgaga	8280
tcatccgtgt	ttcaaaccgg	gcagcttagt	tgccgttctt	ccgaatagca	tcggtaacat	8340
gagcaaagtc	tgccgcctta	caacggctct	cccgcgtacg	ccgtccccga	ctgatggct	8400
gcctgtatcg	agtggtgatt	ttgtgccgag	ctgcccgtcg	gggagctgtt	ggctggctgg	8460

tggcaggata tattgtggtg taaacaaatt gacgcttaga caacttaata acacattgcg	8520
gacgtttta atgtactggg gtggttttc ttttccaccag tgagacgggc aacagctgat	8580
tgcccttcac cgccctggccc tgagagagtt gcagcaagcg gtccacgctg gtttgcggca	8640
gcagggcgaaa atcctgtttg atgggtggttc cgaaatcgcc aaaatccctt ataaatcaaa	8700
agaatagccc gagataggggt tgagtgttgc tccagttgg aacaagagtc cactattaaa	8760
gaacgtggac tccaacgtca aaggcgaaa aaccgtctat cagggcgatg gcccactacg	8820
tgaaccatca cccaaatcaa gtttttggg gtcgaggtgc cgtaaagcac taaatcgaa	8880
ccctaaaggg agcccccgat ttagagcttg acggggaaag cccgcgaacg tggcgagaaa	8940
ggaagggaag aaagcgaaag gagcgggcgc cattcaggct gcgcactgt tgggaaggc	9000
gatcggtgcg ggcctttcg ctattacgccc agctggcgaa agggggatgt gctgcaaggc	9060
gattaagttg ggtaacgcca gggtttccc agtcacgacg ttgtaaaacg acggccagtg	9120
aattaattcc catcttgaaa gaaatatagt ttaaatatatt attgataaaaa taacaagtca	9180
ggtattatag tccaagcaaa aacataaatt tattgatgca agtttaaatt cagaaatatt	9240
tcaataactg attatatcg ctggtagatt gccgtatgc aaagactgag tgctatatt	9300
tgtgtaatac ataaatttgat gatatacgta gcttagctca tcggggatc cgctgaa	9360
agcttgggtc ccgctcagaa gaactcgatc agaaggcgat agaaggcgat gcgcgtcgaa	9420
tcgggagcgg cgataccgta aagcacgagg aagcggtcag cccattcgcc gccaagctct	9480
tcagcaatat cacggtagc caacgctatg tcctgatgc ggtccgccc acccagccgg	9540
ccacagtcga tgaatccaga aaagcgccca tttccacca tgatattcgg caagcaggca	9600
tcgccccatggg tcacgacgag atcctcgccg tcggcatgc gcgccttgcg cctggcgaa	9660
agttcggctg gcgcgagccc ctgatgctct tcgtccagat catcctgatc gacaagaccg	9720
gcttccatcc gagtacgtgc tcgctcgatg cgatgttcg cttgggtggc gaatggcgag	9780
gtagccggat caagcgatg cagccgccc attgcacgat ccatgatgga tactttctcg	9840
gcaggagcaa ggtgagatga caggagatcc tgccccggca cttcgcccaa tagcagccag	9900
tcccttcccg cttcagtgc aacgtcgagc acagctgcgc aaggaacgcc cgctgtggcc	9960
agccacgata gccgcgcgtgc ctcgtcctgc agttcattca gggcaccggc caggtcggtc	10020
ttgacaaaaaa gaaccggcgccc cccctgcgtc gacagccgga acacggcgac atcagagcag	10080
ccgattgtct gttgtgccc gtcatagccg aatagcctct ccacccaagc ggccggagaa	10140

cctgcgtgca atccatcttgcataatccaa gctccatgg gccctcgact agagtcgaga 10200
 tctggattga gagtgaatat gagactctaa ttggataccg agggaaattt atggAACGTC 10260
 agtggagcat ttttgacaag aaatatttgc tagctgatag tgaccttagg cgactttga 10320
 acgcgcaata atggTTCTG acgtatgtgc ttagctcatt aaactccaga aaccCGCGC 10380
 tgagtggctc cttcaacgtt gcggttctgt cagttccaaa cgtaaaacgg cttgtcccgc 10440
 gtcatcgccg ggggtcataa cgtgactccc ttaattctcc gctcatgatc ttgatcccct 10500
 gcGCCatcag atcCTTGGCG gcaagaaaagc catccagttt actttgcagg gcttccaaac 10560
 cttaccagag ggcGCCCGAG ctggcaattc cggttcgctt gctgtccata aaaccgccc 10620
 gtctagctat cgccatgtaa gcccaactgca agctacctgc tttcttttgcgcttgcgtt 10680
 ttccCTTGTc cagatagccc agtagctgac attcatccgg ggtcagcacc gtttctgcgg 10740
 actggCTTTC tacgtgttcc gcttcTTTA gcagccCTTg cgccCTgagt gcttgcggca 10800
 gcgtgaagct tgcattgcctg caggtcgacg ggcGCCGAG ctcctcgagc aaatttacac 10860
 attGCCacta aacgtctaaa cccttgtaat ttgttttgc ttactatgt gtgttatgt 10920
 tttgatttgc gataaatttt tatatttggt actaaattta taacacctt tatgctaacg 10980
 ttGCCAACA cttagcaatt tgcaagttga ttaattgatt ctaaatttatt tttgtcttct 11040
 aaatacatat actaatcaac tgaaatgtta aatatttgc aatatttcta ctataggaga 11100
 attaaagtga gtgaatatgg taccacaagg tttggagatt taattgttgc aatgctgcat 11160
 ggtggcata tacaccaaaac attcaataat tcttggaggat aataatggta ccacacaaga 11220
 tttgaggtgc atgaacgtca cgtggacaaa aggttttagta atttttcaag acaacaatgt 11280
 taccacacac aagtttgag gtgcattgcattt ggtggccctg tgaaagttt aaaaatattt 11340
 tgaaatgtat ttgcattggaa gccatgtgtta aaaccatgac atccacttgg aggatgcaat 11400
 aatgaagaaa actacaaatt tacatgcaac tagttatgca tgcgttatataataatgagga 11460
 ttttgcataa ctttcattca tacacactca ctaagttta cacgattata atttcttcat 11520
 agccagccca ccgcgggtggg cggccgcctg cagtctagaa ggcctcctgc tttaatgaga 11580
 tatgcgagac gcctatgatc gcatgatatt tgcttcaat tctgttgc acgttgcataa 11640
 aaacctgagc atgtgttagct cagatcctta ccggccggttt cggttcattc taatgaatat 11700
 atcaccggtt actatcgat ttttatgaat aatatttctcc gttcaattta ctgattgtcc 11760
 gtcgacgaat tcgagctcgg cgcgcctcta gaggatcgat gaattcagat cggctgagtg 11820
 gctccttcaa cgttgcgggtt ctgtcagttc caaacgtaaa acggcttgc ccgcgtcatc 11880

ggcgggggtc ataacgtgac tcccttaatt ctccgctcat gatcagatg	tcgttcccg	11940	
ccttcagttt aaactatcgat	tgttgacag gatatattgg	cggtaaacc taagagaaaa	12000
gagcgtttat tagaataatc	ggatattaa aaggcgtga	aaaggttat cttcgtcca	12060
tttgcgtatgtc	catgccaacc acagggttcc	cca	12093

<210>	28
<211>	12085
<212>	DNA
<213>	artificial sequence
<220>	
<221>	misc_feature
<222>	(1)..(12085)
<223>	plant expression vector with one promoter-terminator expression cassette

<400>	28						
gatctggcgc	cggccagcga	gacgagcaag	attggccgcc	gcccgaaacg	atccgacagc	60	
gcccgcagca	caggtgcgca	ggcaaattgc	accaacgcat	acagcgccag	cagaatgcc	120	
tagtggcg	tgacgtcg	tttgcgtatgtc	cgagtgaacc	agatcg	ggaggcccg	cagcaccggc	180
ataatcaggc	cgatgcccac	agcg	tcgacgtgc	tcagaattac	gatcagggt	240	
atgttgggtt	tcacgtctgg	cctccggacc	agcctccg	gttccgattt	aacgcgcgga	300	
ttctttatca	ctgataagtt	gttggacata	ttatgtttat	cagtgataaa	gtgtcaagca	360	
tgacaaagtt	gcagccgaat	acagtgtatcc	gtgccgc	ggacctgtt	aacgagg	420	
cgtagacgg	tctgacgaca	cgcaactgg	cgaaacggtt	gggggttcag	cagccggcgc	480	
tttactggca	cttcaggaac	aagcggcgc	tgctcgacgc	actggccgaa	gccatgctgg	540	
cgagaatca	tacgcattcg	gtgccgagag	ccgacgacga	ctggcgctca	tttctgatcg	600	
ggaatgccc	cagttcagg	caggcgctgc	tcgcctaccg	cgatggcg	cgcatccatg	660	
ccggcacg	accggcgca	ccgcagatgg	aaacggccga	cgcg	cagcttcc	720	
gcgaggcg	ttttcggcc	ggggacgccc	tcaatgcg	gtgacaatc	agctacttca	780	
ctgttgggc	cgtgcttgag	gagcaggccg	gacgacg	tgccggcg	cgccggca	840	
ccgttgaaca	ggctccgctc	tcgccc	ctgt	tgccggccgc	gatagacg	900	
ccgg	ccg	ggac	tcg	cgat	tgat	960	
ggaggctcg	tgtcaggaac	gttgaaggac	cgagaaagg	tgacgatt	tgaggaccgc	1020	

tgccggagcg caacccactc actacagcag agccatgtag acaacatccc ctccccctt	1080
ccaccgcgtc agacgcccgt agcagcccgc tacgggcttt ttcatgcctt gccctagcgt	1140
ccaaggctca cggccgcgtc cggcctctct ggcggccttc tggcgcttt ccgcttcctc	1200
gctcaactgac tcgctgcgtc cggtcggtcg gctgcggcga gcggtatcag ctcactcaaa	1260
ggcggtataa cggttatcca cagaatcagg ggataacgca ggaaagaaca tgtgagcaaa	1320
aggccagcaa aaggccagga accgtaaaaa ggccgcgttg ctggcggttt tccataggct	1380
ccgccccctt gacgagcatc aaaaaatcg acgctcaagt cagaggtggc gaaacccgac	1440
aggactataa agataccagg cgttcccccc tggaaagctcc ctcgtgcgtc ctccgtttcc	1500
gaccctgccc cttaccggat acctgtccgc ctttctccct tcgggaagcg tggcgcttt	1560
ccgctgcata accctgcttc ggggtcatta tagcgatttt ttcggtatata ccattcttt	1620
tcgcacgata tacaggattt tgccaaaggg ttctgttaga ctttccttgg tgtatccaac	1680
ggcgtcagcc gggcaggata ggtgaagtag gcccacccgc gagcgggtgt tccttcttca	1740
ctgtccctta ttgcacactg gcggtgctca acgggaatcc tgctctgcga ggctggccgg	1800
ctaccgcgg cgtaacagat gaggcaagc ggtggctga taaaaccaag ccaaccagga	1860
agggcagccc acctatcaag gtgtactgcc ttccagacga acgaagagcg attgaggaaa	1920
aggcggcggc ggccggcatg agcctgtcgg cctacctgct ggccgtcggc caggctaca	1980
aaatcacggg cgtcgtggac tatgagcacg tccgcagact ggccgcatac aatggcgacc	2040
tggccgcctt gggcgccctg ctgaaaactct ggctcaccga cgacccgcgc acggcgcgg	2100
tcggtgatgc cacgatcctc gccctgctgg cgaagatcga agagaagcag gacgagcttgc	2160
gcaaggtcat gatggcggt gtcgcggcga gggcagagcc atgactttt tagccgctaa	2220
aacggccggg gggtgcggt gattgccaag cacgtccccca tgcgctccat caagaagagc	2280
gacttcgcgg agctggtaa gtacatcacc gacgagcaag gcaagaccga ggcgccttgc	2340
gacgctcacc gggctggttt ccctcgccgc tggcgctggcg gccgtctatg gccctgcaaa	2400
cgcgccagaa acgcccgtcga agccgtgtgc gagacaccgc ggccgcggc gttgtggata	2460
cctcgccgaa aacttggccc tcactgacag atgagggcgc gacgttgaca cttgagggc	2520
cgactcaccc ggcgcggcgt tgacagatga gggcaggct cgatttcggc cggcgcgtg	2580
gagctggcca gcctcgcaaa tcggcgaaaa cgcctgattt tacgcgagtt tcccacagat	2640
gatgtggaca agcctgggta taagtgcctt gcggtattga cacttgaggg ggcgcactac	2700
tgacagatga gggcgcgtat ccttgacact tgagggcag agtgctgaca gatgagggc	2760

gcacctattg acatttggagg ggctgtccac aggcagaaaa tccagcattt	2820
ccgcccgttt ttcggccacc gctaacctgt cttaaacctt gctttaaac caatattat	2880
aaaccttgtt tttaaccagg gctgcccctt gtgcgcgtga cgcgcacgc cgaagggggg	2940
tgccccccct tctcgaaccc tcccgcccg ctaacgcggg cctccatcc ccccagggc	3000
tgcgccctc ggccgcgaac ggctcaccc caaaaatggc agcgctggca gtccttgc	3060
ttgccggat cggggcagta acgggatggg cgatcagccc gagcgcgacg cccggaagca	3120
ttgacgtgcc gcaggtgctg gcatcgacat tcagcgacca ggtgccggc agtgagggcg	3180
gccccctggg tggccgcctg cccttcaattt cggccgtcgg ggcattcacg gacttcatgg	3240
cggggccggc aatttttacc ttgggcattt ttggcatagt ggtcgccgggt gccgtgctcg	3300
tgttcggggg tgcgataaaac ccagcgaacc atttgaggtg ataggtaaga ttataccgag	3360
gtatgaaaac gagaatttggc cctttacaga attactctat gaagcgccat atttaaaaag	3420
ctaccaagac gaagaggatg aagaggatga ggaggcagat tgccttgaat atattgacaa	3480
tactgataag ataatatatc ttttatatac aagatatcgc cgtatgtaa gatttcaggg	3540
ggcaaggcat aggcagcgcg ctatcaata tatctataga atggcggaaag cataaaaact	3600
tgcattggact aatgcttgaa acccaggaca ataaccctt agcttgcataa ttctatcata	3660
attgggtaat gactccaact tattgatagt gttttatgtt cagataatgc ccgatgactt	3720
tgtcatgcag ctccaccgat ttggagaacg acagcgactt ccgtcccagc cgtgccaggt	3780
gctgcctcag attcaggtta tgccgctcaa ttgcgtcgat atatcgctt ctgattacgt	3840
gcagcttcc ctccaggcgg gattcataca gcccgcggcc atccgtcatc catatcacca	3900
cgtcaaaggg tgacagcagg ctcataagac gcccagcgt cgccatagtg cggttaccga	3960
atacgtgcgc aacaaccgtc ttccggagac tgtcatacgc gtaaaacagc cagcgtggc	4020
gcgatttgcgc cccgacatag cccactgtt cgtccatttc cgccgcacgc atgacgtcac	4080
tgccccggctg tatgcgcgag gttaccgact gcccgcgtatgtttaat gacgtaaaat	4140
cgtgttggagg ccaacgccc taatgcgggc tggtgcccgg catccaaacgc cattcatggc	4200
catatcaatg attttctggc gcttaccggg ttggaaagcg gtgtaaatgtt actgcagttt	4260
ccatgtttta cggcagtgag agcagagata gcccgcgtatgtt ccggccggc ttttgcgtt	4320
acgcaccacc cccgtcagtag ctgaacagga gggacagctg atagacacag aagccactgg	4380
agcacctcaa aaacaccatc atacactaaa tcagtaagtt ggcagcatca cccataattt	4440

tggtttcaaa atcggctccg tcgatactat gttatacgcc aactttgaaa acaactttga	4500
aaaagctgtt ttctggatt taaggttta gaatgcaagg aacagtgaat tggagttcgt	4560
cttggtataa ttagcttctt ggggtatctt taaatactgt agaaaagagg aagggaaataa	4620
taaatggcta aaatgagaat atcaccggaa ttgaaaaaac tgatcgaaaa ataccgctgc	4680
gtaaaagata cggaaggaat gtctcctgct aaggatata agctggtgg agaaaatgaa	4740
aacctatatt taaaaatgac ggacagccgg tataaaggga ccacctatga tgtggaacgg	4800
gaaaaggaca tgatgctatg gctggaagga aagctgcctg ttccaaaggt cctgcacttt	4860
gaacggcatg atggctggag caatctgctc atgagtgagg ccgatggcgt ccttgctcg	4920
gaagagtatg aagatgaaca aagccctgaa aagattatcg agctgtatgc ggagtgcattc	4980
aggctcttc actccatcga catatcgat tgcctata cgaatagctt agacagccgc	5040
ttagccgaat tggattactt actgaataac gatctggccg atgtggattg cgaaaactgg	5100
gaagaagaca ctccattnaa agatccgcgc gagctgtatg atttttaaa gacggaaaag	5160
ccogaagagg aacttgtctt ttcccacggc gacctggag acagcaacat ctttgaaa	5220
gatggcaaag taagtggctt tattgatctt gggagaagcg gcagggcggc caagtggat	5280
gacattgcct tctgcgtccg gtcgatcagg gaggatatcg gggagaaca gtatgtcgag	5340
ctatttttg acttactgg gatcaagcct gattggaga aaataaaaata ttatattta	5400
ctggatgaat tgtttagta cctagatgtg gcgcaacgt gccggcgaca agcaggagcg	5460
caccgacttc ttccgcatca agtgtttgg ctctcaggcc gaggcccacg gcaagtattt	5520
ggcaaggggg tcgctggat tcgtgcaggg caagattcg aataccaatg acgagaagga	5580
cggccagacg gtctacggc ccgacttcat tgccgataag gtggattatc tggacaccaa	5640
ggcaccaggc gggtaaaatc agaataagg gcacattgcc ccggcgtgag tcggggcaat	5700
cccgcaagga gggtaatga atcggacgtt tgaccggaa gcatacaggc aagaactgat	5760
cgacgcgggg tttccgccc aggatgccga aaccatcgca agccgcaccc tcattgcgtc	5820
gccccgcgaa accttcaggc ccgtcggctc gatggtccag caagctacgg ccaagatcg	5880
gccccgcgacgc gtgcactgg ctccccctgc cctgcccgcg ccatcgccg ccgtggagcg	5940
ttcgcgtcgt ctgcacagg aggcggcagg tttggcgaag tcgatgacca tcgacacgcg	6000
aggaactatg acgaccaaga agcgaaaaac cgccggcgag gacctggcaa aacaggtcag	6060
cgaggccaaag caggccgcgt tgctgaaaca cacgaagcag cagatcaagg aaatgcagct	6120
ttccttgcgttc gatattgcgc cgtggccggc cacgatgcga gcgatgccaa acgacacggc	6180

ccgctctgcc	ctgttaccca	cgcgcaacaa	gaaaatcccg	cgcgaggcgc	tgcaaaacaa	6240
ggtcattttc	cacgtcaaca	aggacgtgaa	gatcacctac	accggcgtcg	agctgcggc	6300
cgacgatgac	gaactggtgt	ggcagcaggt	gttggagtac	gcgaagcgc	cccctatcg	6360
cgagccgatc	accttacgt	tctacgagct	ttgccaggac	ctgggcttgt	cgatcaatgg	6420
ccggatttac	acgaaggccg	aggaatgcct	gtcgcccta	cagggcacgg	cgatggcctt	6480
cacgtccgac	cgcgttggc	acctggaatc	ggtgtcgctg	ctgcaccgct	tccgcgtcct	6540
ggaccgtggc	aagaaaacgt	cccggttgc	ggtcctgatc	gacgaggaaa	tcgtcgtgct	6600
gtttgctggc	gaccactaca	cgaattcat	atgggagaag	taccgcaagc	tgtcgccgac	6660
ggcccgacgg	atgttcgact	atttcagctc	gcaccggag	ccgtacccgc	tcaagctgga	6720
aaccttccgc	ctcatgtgcg	gatcgatttc	cacccgcgtg	aagaagtggc	gcgagcaggt	6780
cggcgaagcc	tgcgaagagt	tgcgaggcag	cggcctggtg	gaacacgcct	gggtcaatga	6840
tgacctggtg	cattgcaa	ac gctagggcct	tgtgggtca	gttccggctg	ggggttcage	6900
agccagcgct	ttactggcat	ttcaggaaca	agcgggact	gctcgacgca	cttgcttcgc	6960
tcagtatcgc	tcgggacgca	cggcgcgctc	tacgaactgc	cgataaacag	aggattaaaa	7020
ttgacaattg	tgattaaggc	tcagattcga	cggcttggag	cggccgacgt	gcaggatttc	7080
cgcgagatcc	gattgtcggc	cctgaagaaa	gctccagaga	tgttcgggtc	cgttacgag	7140
cacgaggaga	aaaagcccat	ggaggcggtc	gctgaacggt	tgcgagatgc	cgtggcattc	7200
ggccctaca	tcgacggcga	gatcattggg	ctgtcggtct	tcaaacagga	ggacggcccc	7260
aaggacgctc	acaaggcgca	tctgtccggc	gtttcgtgg	agcccgaaca	gcgaggccga	7320
ggggtcgccc	gtatgtcgct	gcggcggtt	ccggcgggtt	tattgctcgt	gatgatcg	7380
cgacagattc	caacggaaat	ctgggtggatg	cgcacattca	tcctcggcgc	acttaatatt	7440
tcgctattct	ggagcttgtt	gtttatttcg	gtctaccgccc	tgccggcgg	ggtcgcggcg	7500
acggtaggcg	ctgtcagcc	gtgtatggtc	gtgttcatct	ctgcccgtct	gctaggttagc	7560
ccgatacgat	tgtggcggt	cctggggct	atttgcggaa	ctgcggcggt	ggcgctgttg	7620
gtgttgacac	caaacgcagc	gttagatcct	gtcggcgctg	cagcgggcct	ggcggggcg	7680
gtttccatgg	cgttcggaac	cgtgctgacc	cgcaagtggc	aacctcccgt	gcctctgctc	7740
accttaccg	cctggcaact	ggcggccgga	ggacttctgc	tcgttccagt	agcttagtg	7800
tttgatccgc	caatcccgat	gcctacagga	accaatgttc	tcggcctggc	gtggctcg	7860

ctgatcggag cgggttaac ctacttcctt tggttccggg ggatctcgcg actcgaacct	7920
acagttgtt ccttactggg ctttctcagc cccagatctg gggtcgatca gcccgggatg	7980
catcaggccg acagtcggaa cttcgggtcc ccgacactgta ccattcggtg agcaatggat	8040
aggggagttg atatcgtcaa cggtcacttc taaagaataa ggcactca gcttcctcag	8100
cggctttatc cagcgatttc ctattatgtc ggcatagttc tcaagatcga cagcctgtca	8160
cggtaagcg agaaatgaat aagaaggctg ataattcggta tctctgcgag ggagatgata	8220
tttgatcaca ggcagcaacg ctctgtcattc gttacaatca acatgctacc ctccgcgaga	8280
tcatccgtgt ttcaaaacccg gcagcttagt tgccgttctt ccgaatagca tcggtaacat	8340
gagcaaagtc tgccgcctta caacggctct cccgctgacg ccgtcccgga ctgatggct	8400
gcctgtatcg agtggtgatt ttgtgccgag ctgcccgtcg gggagctgtt ggctggctgg	8460
tggcaggata tattgtggtg taaacaaatt gacgcttaga caacttaata acacattgcg	8520
gacgaaaaatc atgtactggg gtgggttttc ttttaccagg tgagacgggc aacagctgat	8580
tgcccttcac cgcctggccc tgagagagtt gcagcaagcg gtccacgctg gtttgcggca	8640
gcaggcgaaa atcctgtttg atggtggttc cgaaatcgcc aaaatccctt ataaatcaaa	8700
agaatagccc gagatagggt tgagtgttgc tccagttgg aacaagagtc cactattaaa	8760
gaacgtggac tccaacgtca aaggcgaaa aaccgtctat cagggcgatg gcccactacg	8820
tgaaccatca cccaaatcaa gtttttggg gtcgaggtgc cgtaaagcac taaatcgaa	8880
ccctaaagg agcccccgat ttagagcttg acggggaaag cggcgaaacg tggcgagaaa	8940
ggaagggaaag aaagcgaaag gagcgccgc cattcaggct ggcactgt tggaaaggc	9000
gatcggtgcg ggcctttcg ctattacgcc agctggcgaa agggggatgt gctgcaaggc	9060
gattaagttg ggtaacgcca gggtttccc agtcacgacg ttgtaaaacg acggccagtg	9120
aattaattcc catcttggaa gaaatatagt ttaaatattt attgataaaa taacaagtca	9180
ggtattatag tccaagcaaa aacataaatt tattgatgca agttaaatt cagaaatatt	9240
tcaataactg attatatcag ctggtagatt gccgtagatg aaagactgag tgcgatatta	9300
tgtgtataac ataaatttgat gatatacgta gcttagctca tcgggggatc cgtcgaagct	9360
agcttgggtc cgcgtcagaa gaactcgatc agaaggcgat agaaggcgat ggcgtcgaa	9420
tcgggagccg cgataccgta aagcacgagg aagcggtcg cccattcgcc gccaagctct	9480
tcagcaatat cacggtagc caacgctatg tcctgatagc ggtccgcccac acccagccgg	9540
ccacagtcga tgaatccaga aaagcgccca tttccacca tgatattcgg caagcaggca	9600

tcgcccattgg	tcacgacgag	atcctcgccg	tcgggcattgc	gccccttgag	cctggcgaac	9660
agttcggctg	gcgcgagccc	ctgatgctct	tcgtccagat	catcctgatc	gacaagaccg	9720
gcttccatcc	gagtacgatc	tcgctcgatg	cgatgttcg	cttggggcgc	aatgggcag	9780
gtagccggat	caagcgatg	cagccgccc	attgcattcag	ccatgatgga	tactttctcg	9840
gcaggagcaa	ggtgagatga	caggagatcc	tgcccccggca	cttcgccccaa	tagcagccag	9900
tcccttcccg	cttcagtgac	aacgtcgagc	acagctgcgc	aaggaacgcc	cgtcgccgc	9960
agccacgata	gccgcgctgc	ctcgctctgc	agttcattca	gggcaccgga	caggtcggtc	10020
ttgacaaaaaa	gaaccggggcg	cccctgcgct	gacagccgga	acacggccgc	atcagagcag	10080
ccgattgtct	gttgtgcccc	gtcatagccg	aataggctct	ccacccaagc	ggccggagaa	10140
cctgcgtgca	atccatcttg	ttcaatccaa	gctccatgg	gccctcgact	agagtcgaga	10200
tctggattga	gagtgaatat	gagactctaa	ttggataccg	aggggaattt	atggAACGTC	10260
agtggagcat	ttttgacaag	aaatatttgc	tagctgatag	tgaccttagg	cgactttga	10320
acgcgcataa	atggtttctg	acgtatgtgc	ttagctcatt	aaactccaga	aacccgcggc	10380
tgagtggctc	cttcaacgtt	gcgggtctgt	cagttccaaa	cgtaaaaacgg	cttgtccgc	10440
gtcatcgccg	ggggtcataa	cgtgactccc	ttaattctcc	gctcatgatc	ttgatcccc	10500
gcgcctcag	atccttggcg	gcaagaaagc	catccagttt	actttgcagg	gcttcccaac	10560
cttaccagag	ggcgccccag	ctggcaattc	cggtcgctt	gctgtccata	aaaccgcggc	10620
gtctagctat	cgcctatgtaa	gcccaactgca	agctacactgc	tttctctttg	cgcttgcgtt	10680
ttcccttgc	cagatagccc	agtagctgac	attcatccgg	ggtcagcacc	gtttctgcgg	10740
actggcttcc	tacgtgttcc	gcttccttta	gcagcccttg	cgcctgagt	gcttgccgca	10800
gcgtgaagct	tgcattgcctg	caggtcgacg	gcgcgcccgg	ctcctcgagc	aaatttacac	10860
attgccacta	aacgtctaaa	cccttgcata	ttgttttgc	tttactatgt	gtgttatgt	10920
tttgatttgc	gataaaattt	tatatttgg	actaaatttta	taacaccttt	tatgctaacg	10980
tttgccaaaca	cttagcaatt	tgcaagttga	ttaattgatt	ctaaatttatt	tttgccttct	11040
aaatacatat	actaatcaac	tggaaatgt	aatatttgc	aatatttcta	ctataggaga	11100
attaaagtga	gtgaatatgg	taccacaagg	tttggagatt	taattgttgc	aatgctgcatt	11160
ggatggcata	tacaccaaaac	attcaataat	tcttgaggat	aataatggta	ccacacaaga	11220
tttgaggtgc	atgaacgtca	cgtggacaaa	aggtttagta	attttcaag	acaacaatgt	11280

taccacacac aagtttgag gtgcgtgc gatgccctg tggaaagtt aaaaatattt 11340
 tggaaatgtat ttgcgtggaa gccatgtgta aaaccatgac atccacttgg aggatgcaat 11400
 aatgaagaaa actacaaatt tacatgcaac tagttatgca ttagtctat ataatgagga 11460
 ttttgcataa ctttcattca tacacactca ctaagttta cacgattata atttcttcat 11520
 agccagcgga tccgatatcg ggcggctag cgtaaccct gcttaatga gatatgcgag 11580
 acgcctatga tcgcatgata ttgcgttca attctgtgt gcacgttga aaaaacctga 11640
 gcatgtgtag ctcagatcct taccggcgtt ttcgggtcat tctaataatgat atatcaccgg 11700
 ttactatcgat atttttatga ataataattct ccgttcaatt tactgattgt ccgtcgacga 11760
 attcgagctc ggcgcgcctc tagaggatcg atgaattcag atcggctgag tggctccttc 11820
 aacgttgcgg ttctgtcagt tccaaacgta aaacggcttgc tccgcgtca tcggcgggggg 11880
 tcataacgtg actcccttaa ttctccgcctc atgatcagat tgctgttcc cgccttcagt 11940
 ttaaactatc agtgtttgac agatataattt ggcggtaaa cctaagagaa aagagcgttt 12000
 attagaataa tcggatattt aaaagggcgt gaaaagggtt atccttcgtc catttgtatg 12060
 tgcatgccaa ccacagggtt cccca 12085

<210> 29
 <211> 12079
 <212> DNA
 <213> artificial sequence

 <220>
 <221> misc_feature
 <222> (1)..(12079)
 <223> plant expression vector with one promoter-terminator expression cassette

<400> 29
 gatctggcgc cggccagcga gacgagcaag attggccgcc gcccggaaacg atccgacagc 60
 gcggccagca caggtgcgca ggcaaaattgc accaacgcattt acagcgccag cagaatgc 120
 tagtggcgg tgacgtcggtt cgagtgaacc agatcgcgca ggaggccgg cagcaccggc 180
 ataataatcaggc cgtatgcgcac agcgtcgagc gcgcacagtgc tcagaattac gatcagggt 240
 atgttgggtt tcacgtctgg cctccggacc agcctccgtt ggtccgattt aacgcgcgg 300
 ttctttatca ctgataagtt ggtggacata ttatgtttat cagtgataaa gtgtcaagca 360
 tgacaaaagtt gcagccaat acagtgtatcc gtgcgcgcctt ggacctgttgc aacgaggctg 420
 gcgttagacgg tctgacgaca cgcaaaactgg cgaaacggtt gggggttcag cagccggcgc 480
 tttactggca cttcaggaac aagcgggcgc tgctcgacgc actggccgaa gccatgctgg 540

cgagaatca tacgcattcg gtgccgagag ccgacgacga ctggcgctca	600
tttctgatcg ggaatgcccg cagttcagg cagggcgctgc tcgcctaccg cgatggcgcg cgcatccatg	660
ccggcacgca accgggcgca ccgcagatgg aaacggccga cgcgagctt cgcttcctct	720
gcgaggcggg ttttcggcc ggggacgccc tcaatgcgct gatgacaatc agctacttca	780
ctgttgggc cgtgctttag gaggcaggccg ggcacagcga tgccggcgag cgccggcgca	840
ccgttgaaca ggctccgctc tcgcccgtgt tgccggccgc gatagacgcc ttgcacgaag	900
ccggtccgga cgcagcggttc gaggcaggac tcgcgggtat tgtcgatgga ttggcgaaaa	960
ggaggctcggtgtcaggaaac gttgaaggac cgagaaaggg tgacgattga tcaggaccgc	1020
tgccggagcg caacccactc actacagcag agccatgtag acaacatccc ctcccccttt	1080
ccaccgcgtc agacgcccgt agcagccccgc tacgggcttt ttcatgcctt gccctagcgt	1140
ccaaaggctca cggcccgct cggcctctct ggcggccttc tggcgcttt ccgcttcctc	1200
gctcaactgac tcgctgcgct cggtcgttcg gctgcggcga gcggtatcag ctcactcaaa	1260
ggcggtaata cggttatcca cagaatcagg ggataacgca ggaaagaaca tgtgagcaaa	1320
aggccagcaa aaggccagga accgtaaaaaa ggccgcgttg ctggcggttt tccataggct	1380
ccgccccccct gacgagcatc acaaaaatcg acgctcaagt cagaggtggc gaaaccgcac	1440
aggactataa agataccagg cgtttcccccc tggaagctcc ctcgtgcgct ctccgtttcc	1500
gaccctgccc cttaccggat acctgtccgc ctttcccttc tcgggaagcg tggcgcttt	1560
ccgctgcata accctgcttc ggggtcatta tagcgatttt ttcggatataat ccattcttt	1620
tcgcacgata tacaggattt tgccaaaggg ttcgtgtaga ctttccttgg tgtatccaac	1680
ggcgtcagcc gggcaggata ggtgaagtag gcccacccgc gagcgggtgt tccttcttca	1740
ctgtccctta ttgcacactg gcggtgctca acggaaatcc tgctctgcga ggctggccgg	1800
ctaccgcggc cgtaacagat gagggcaagc ggatggctga tgaaaccaag ccaaccagga	1860
agggcagccc acctatcaag gtgtactgcc ttccagacga acgaagagcg attgaggaaa	1920
aggcggccgc ggccggcatg agcctgtcgg cctacactgct ggccgtcggc caggctaca	1980
aaatcacggg cgtcgtggac tatgagcactg tccgcgagct ggccgcatac aatggcgacc	2040
tggccgcctt gggcggcctg ctgaaaactct ggctcaccga cgacccgcgc acggcgccgt	2100
tcgggtatgc cacgatcctc gccctgtgg cgaagatcga agagaagcag gacgagcttgc	2160
gcaaggatcat gatggcggtg gtccgcccga gggcagagcc atgactttt tagccgctaa	2220

aacggccggg	gggtgcgcgt	gattgccaag	cacgtcccc	tgcgctccat	caagaagagc	2280
gacttcgcgg	agctggtgaa	gtacatcacc	gacgagcaag	gcaagaccga	gcgccttgc	2340
gacgctcacc	gggctggttg	ccctcgccgc	tgggctggcg	gccgtctatg	gccctgcaaa	2400
cgcgccagaa	acgcccgtcga	agccgtgtgc	gagacaccgc	ggccgcccggc	gttgtggata	2460
cctcggaa	aacttggccc	tcactgacag	atgagggcg	gacgttgaca	cttgaggggc	2520
cgactcaccc	ggcgcggcgt	tgacagatga	ggggcaggct	cgatttcggc	cgcgacgtg	2580
gagctggcca	gcctcgcaaa	tcggcgaaaa	cgcctgattt	tacgctgagtt	tcccacagat	2640
gatgtggaca	agcctggga	taagtgcct	gcggatttga	cacttgaggg	gcgcgactac	2700
tgacagatga	ggggcgcgat	ccttgacact	tgagggcgag	agtgcgtaca	gatgagggc	2760
gcacctattt	acatttgagg	ggctgtccac	aggcagaaaa	tccagcattt	gcaagggttt	2820
ccggccgttt	ttcggccacc	gctaacctgt	cttttaacct	gctttaaac	caatatttat	2880
aaaccttgtt	tttaaccagg	gctgcgcct	gtgcgcgtga	ccgcgcacgc	cgaagggggg	2940
tgccccccct	tctcgaaccc	tcccgcccc	ctaacgcggg	cctcccatcc	ccccagggc	3000
tgcgccccctc	ggccgcgaac	ggcctcaccc	caaaaatggc	agcgctggca	gtccttgcca	3060
ttgccgggat	cggggcagta	acgggatggg	cgatcagccc	gagcgcgacg	cccgaaagca	3120
ttgacgtgcc	gcaggtgctg	gcatcgacat	tcagcgacca	ggtgccgggc	agtgagggcg	3180
gcggcctggg	tggcggcctg	cccttcactt	cggccgtcgg	ggcattcacg	gacttcatgg	3240
cggggccggc	aattttacc	ttggcattt	ttggcatagt	gtcgcgggt	gccgtgctcg	3300
tgttcggggg	tgcgataaac	ccagcgaacc	atttgaggtg	ataggtaaag	ttataccgag	3360
gtatgaaaac	gagaattgga	cctttacaga	attactctat	gaagcgccat	atttaaaaag	3420
ctaccaagac	gaagaggatg	aagaggatga	ggaggcagat	tgccttgaat	atattgacaa	3480
tactgataag	ataatatatac	ttttatatac	aagatatcgc	cgtatgtaa	gatttcaggg	3540
ggcaaggcat	aggcagcg	cttatcaata	tatctataga	atgggcaaag	cataaaaaact	3600
tgcattggact	aatgctgaa	acccaggaca	ataacctt	agcttgcataa	ttctatcata	3660
attggtaat	gactccaact	tattgatgt	gttttatgtt	cagataatgc	ccgatgactt	3720
tgtcatgcag	ctccaccgat	tttgagaacg	acagcgactt	ccgtcccagc	cgtgccaggt	3780
gctgcctcag	attcaggtt	tgccgctcaa	ttcgctgcgt	atatcgctt	ctgattacgt	3840
gcagctttcc	tttcaggcgg	gattcataca	gccccagcc	atccgtcatc	cataatcacca	3900

cgtcaaaggg	tgacagcagg	ctcataagac	gccccagcgt	cgccatagtg	cgttcaccga	3960
atacgtgcgc	aacaaccgtc	ttccggagac	tgtcatacgc	gtaaaacagc	cagcgctggc	4020
gcgatttagc	cccgacatag	ccccactgtt	cgtccatttc	cgcgcagacg	atgacgtcac	4080
tgcccggtcg	tatgcgcgag	gttaccgact	gcggcctgag	tttttaagt	gacgtaaaat	4140
cgtgttgggg	ccaaccccc	taatgcgggc	tgttggccgg	catccaacgc	cattcatggc	4200
catatcaatg	attttctgggt	gcgtaccggg	ttgagaagcg	gtgtaagtga	actgcagttg	4260
ccatgtttta	cggcagttag	agcagagata	gcgcgtatgt	ccggcgggtgc	ttttgccgtt	4320
acgcaccacc	ccgtcagtag	ctgaacacgga	gggacagctg	atagacacag	aagccactgg	4380
agcacctcaa	aaacaccatc	atacactaaa	tcaagtatgtt	ggcagcatca	cccataattg	4440
tggtttcaaa	atcggctccg	tcgatactat	gttatacgcc	aactttgaaa	acaactttga	4500
aaaagctgtt	ttctggtatt	taaggttta	gaatgcaagg	aacagtgaat	tggagttcgt	4560
cttggttataa	ttagcttctt	gggttatctt	taaatactgt	agaaaagagg	aaggaaataa	4620
taaatggcta	aaatgagaat	atcacccgaa	ttgaaaaaac	tgatcgaaaa	ataccgctgc	4680
gtaaaagata	cggaaaggaaat	gtctcctgct	aaggtatata	agctggtggg	agaaaatgaa	4740
aacctatatt	taaaaatgac	ggacagccgg	tataaaggga	ccacctatga	tgtggaacgg	4800
gaaaaggaca	tgatgctatg	gctggaagga	aagctgcctg	ttccaaagggt	cctgcacttt	4860
gaacggcatg	atggctggag	caatctgctc	atgagtgagg	ccgatggcgt	ccttgctcg	4920
gaagagatgt	aagatgaaca	aagccctgaa	aagattatcg	agctgtatgc	ggagtgcac	4980
aggcttttc	actccatcga	catatcggt	tgtccctata	cgaatagctt	agacagccgc	5040
ttagccgaat	tggattactt	actgaataac	gatctggccg	atgtggattg	cgaaaactgg	5100
gaagaagaca	ctccatttaa	agatccgcgc	gagctgtatg	attttttaaa	gacggaaaag	5160
cccgaaaggagg	aacttgtctt	ttcccacggc	gacctgggag	acagcaacat	ctttgtaaaa	5220
gatggcaaag	taagtggctt	tattgatctt	gggagaagcg	gcagggcgga	caagtggat	5280
gacattgcct	tctgcgtccg	gtcgatcagg	gaggatatcg	ggaaagaaca	gtatgtcgag	5340
ctattttttg	acttactggg	gatcaagcct	gattgggaga	aaataaaaata	ttatatttt	5400
ctggatgaat	tgttttagta	cctagatgtg	gcgcaacgt	gccggcgaca	agcaggagcg	5460
caccgacttc	ttccgcatac	agtgtttgg	ctctcaggcc	gaggcccacg	gcaagtattt	5520
gggcaagggg	tcgctggat	tcgtgcaggg	caagattcgg	aataccaagt	acgagaagga	5580
cggccagacg	gtctacggga	ccgacttcat	tgccgataag	gtggattatc	tggacaccaa	5640

ggcaccaggc	gggtcaaatac	aggaataagg	gcacattgcc	ccggcgtgag	tcggggcaat	5700
cccgcaagga	gggtgaatga	atcggacgtt	tgaccggaag	gcatacaggc	aagaactgat	5760
cgacgcgggg	tttccgccc	aggatgccga	aaccatcgca	agccgcaccc	tcatgcgtgc	5820
gccccgcgaa	accttccagt	ccgtcggctc	gatggtccag	caagctacgg	ccaagatcga	5880
gcgcgacagc	gtgcaactgg	ctccccctgc	cctgcccgcg	ccatcgccg	ccgtggagcg	5940
ttcgcgtcgt	ctcgaacagg	aggcggcagg	tttggcgaag	tcgatgacca	tcgacacgcg	6000
aggaactatg	acgaccaaga	agcgaaaaac	cgcgcgcgag	gacctggcaa	aacaggtcag	6060
cgaggccaag	caggccgcgt	tgctgaaaca	cacgaagcag	cagatcaagg	aaatgcagct	6120
ttccttgttc	gatattgcgc	cgtggccgga	cacgatgcga	gcgatgccaa	acgacacggc	6180
ccgctctgcc	ctgttccacca	cgcgcaccaa	gaaaatcccc	cgcgaggcgc	tgcaaaacaa	6240
ggtcattttc	cacgtcaaca	aggacgtgaa	gatcacctac	accggcgtcg	agctgcgggc	6300
cgacgatgac	gaactggtgt	ggcagcaggt	gttggagtac	gcgaagcgc	cccstatcgg	6360
cgagccgatc	acttcacgt	tctacgagct	ttgccaggac	ctgggctggt	cgatcaatgg	6420
ccggtattac	acgaaggccg	aggaatgcct	gtcgcccta	caggcgacgg	cgatggcctt	6480
cacgtccgac	cgcgttggc	acctggaatc	ggtgtcgctg	ctgcaccgct	tccgcgtct	6540
ggaccgtggc	aagaaaacgt	cccggtgcca	ggtcctgatc	gacgaggaaa	tcgtcgtgct	6600
gtttgctggc	gaccactaca	cggaaattcat	atgggagaag	tacccgcaagc	tgtcgccgac	6660
ggcccgcacgg	atgttcgact	atttcagctc	gcaccggag	ccgtacccgc	tcaagctgg	6720
aaccttccgc	ctcatgtgcg	gatcgattc	cacccgcgtg	aagaagtggc	gcgagcaggt	6780
cggcgaagcc	tgcgaagagt	tgcgaggcag	cggcctggtg	gaacacgcct	gggtcaatga	6840
tgacctggtg	cattgcaaacc	gctagggcct	tgtggggtca	gttccggctg	ggggttcagc	6900
agccagcgct	ttactggcat	ttcaggaaca	agcggcact	gctcgacgc	cttgcttcgc	6960
tcaagtatcgc	tcgggacgc	cggcgcgc	tacgaactgc	cgataaacag	aggattaaaa	7020
ttgacaattg	tgattaaggc	tcaagattcg	cggcttggag	cggccgacgt	gcaggatttc	7080
cgcgagatcc	gattgtcggc	cctgaagaaa	gctccagaga	tgttcgggtc	cgtttacgag	7140
cacgaggaga	aaaagcccat	ggaggcgttc	gctgaacggt	tgcgagatgc	cgtggcattc	7200
ggcgcctaca	tcgacggcga	gatcattggg	ctgtcggct	tcaaacagga	ggacggcccc	7260
aaggacgctc	acaaggcgca	tctgtccggc	gtttcgtgg	agcccgaaca	gcgaggccga	7320

ggggtcgccc gtagctgct gcgggcgttg ccggcgggtt tattgctcgt gatgatgatc	7380
cgacagattc caacggaaat ctggtgatcg cgcatcttca tcctcggcgc acttaatatt	7440
tcgctattct ggagcttgtt gtttatttcg gtctaccgccc tgccggcgg ggtcgccgg	7500
acggtaggcg ctgtgcagcc gctgatggtc gtgttcatct ctgcccgtct gctaggttagc	7560
ccgatacgat tgatggcggt cctggggctt atttgcggaa ctgcggcgtt ggcgcgttgc	7620
gtgttgacac caaacgcagc gctagatcct gtccggcgtc cagcggcctt ggcggggcg	7680
gtttccatgg cgttcggaaac cgtgctgacc cgcaagtggc aaccccggtt gcctctgctc	7740
acctttaccc cctggcaact ggccggcgggaa ggacttctgc tcgttccagt agcttttagtg	7800
tttgcattccgc caatcccgat gcctacagga accaatgttc tcggcctggc gtggctcgcc	7860
ctgatcgag cgggttaac ctacttcctt tggttccggg ggatctcgcg actcgaacct	7920
acagttgttt ctttactggg ctttctcagc cccagatctg gggtcgatca gccggggatg	7980
catcaggccg acagtcggaa cttcgggtcc ccgacactgta ccattcggtg agcaatggat	8040
aggggagttt atatcgtaa cgttcacttc taaagaaata ggcgcactca gtttcctcag	8100
cggctttatc cagcgatttc ctattatgtc ggcatacgatc tcaagatcga cagcctgtca	8160
cgggttaagcg agaaatgaat aagaaggctg ataattcggaa tctctgcgag ggagatgata	8220
tttgcattaca ggcagcaacg ctctgtcatc gttacaatca acatgctacc ctccgcgaga	8280
tcatccgtgt ttcaaaacccg gcagcttagt tgccgttctt ccgaatagca tcggtaacat	8340
gagcaaagtc tgccgcctta caacggctct cccgctgacg ccgtccggaa ctgatggct	8400
gcctgtatcg agtggtgatt ttgtgccgag ctgcggcgtc gggagctgtt ggctggctgg	8460
tggcaggata tattgtggtg taaacaaatt gacgcttaga caacttaata acacattgcg	8520
gacgtttta atgtactggg gtggtttttc ttttccaccag tgagacgggc aacagctgat	8580
tgcccttcac cgcctggccc tgagagagtt gcagcaagcg gtccacgctg gtttgcggcc	8640
gcaggcgaaa atcctgttttgc atgggtggttc cgaaatcgcc aaaatccctt ataaatcaa	8700
agaatagccc gagatagggt tgagtgttgc tccagttgg aacaagagtc cactattaa	8760
gaacgtggac tccaaacgtca aaggcgaaa aaccgtctat cagggcgatg gcccactacg	8820
tgaaccatca cccaaatcaa gttttttggg gtcgaggtgc cgtaaagcac taaatcgaa	8880
ccctaaaggaggg agcccccgat ttagagcttg acggggaaag ccggcgaacg tggcgagaaa	8940
ggaagggaag aaagcgaaag gagcgggcgc cattcaggct ggcgaactgt tgggaaggc	9000

gatcggtgcg	ggcctctcg	ctattacgcc	agctggcgaa	agggggatgt	gctgcaaggc	9060
gattaagttg	ggtaacgcca	gggtttccc	agtcacgacg	ttgtaaaacg	acggccagtg	9120
aattaattcc	catcttgaaa	gaaatatagt	ttaaatattt	attgataaaaa	taacaagtca	9180
ggtattatag	tccaaggcaa	aacataaatt	tattgatgca	agtttaaattt	cagaaatatt	9240
tcaataactg	attatatcag	ctggtagatt	gccgtagatg	aaagactgag	tgcgatatta	9300
tgtgtaatac	ataaattgat	gatatagcta	gcttagctca	tcgggggatc	cgtcgaagct	9360
agcttgggtc	ccgctcagaa	gaactcgtca	agaaggcgat	agaaggcgat	gcgctgcgaa	9420
tcgggagcgg	cgataccgta	aagcacgagg	aagcggtcag	cccattcgcc	gccaagctct	9480
tcagcaatat	cacggtagc	caacgctatg	tcctgatagc	ggtccgcccac	acccagccgg	9540
ccacagtcga	tgaatccaga	aaagcggcca	ttttccacca	tgtatattcg	caagcaggca	9600
tcgccatggg	tcacgacgag	atcctcgccg	tcgggcatgc	gcccctttag	cctggcgaac	9660
agttcggctg	gcgcgagccc	ctgatgctct	tcgtccagat	catcctgatc	gacaagaccg	9720
gcttccatcc	gagtagtgc	tcgctcgatg	cgatgttcg	cttgggtggtc	gaatgggcag	9780
gtagccggat	caagcgtatg	cagccgcccgc	attgcatcag	ccatgatgga	tactttctcg	9840
gcaggagcaa	ggtgagatga	caggagatcc	tgccccggca	cttcgccccaa	tagcagccag	9900
tcccttcccg	cttcagtgac	aacgtcgagc	acagctgcgc	aaggaacgcc	cgtcggtggcc	9960
agccacgata	gccgcgctgc	ctcgtcctgc	agttcattca	ggcacccgga	caggtcggtc	10020
ttgacaaaaaa	gaaccggggcg	cccctgcgct	gacagccgga	acacggcgcc	atcagagcag	10080
ccgattgtct	gttgtgcccc	gtcatagccg	aatagcctct	ccacccaagc	ggccggagaa	10140
cctgcgtgca	atccatcttgc	ttaatccaa	gctccatgg	gccctcgact	agagtcgaga	10200
tctggattga	gagtgaatat	gagactctaa	ttggataccg	agggaaattt	atggaacgtc	10260
agtggagcat	ttttgacaag	aaatatttgc	tagctgatag	tgaccttagg	cgactttga	10320
acgcgcataa	atggtttctg	acgtatgtgc	ttagctcatt	aaactccaga	aacccgcccgc	10380
tgagtggctc	cttcaacgtt	gccccgtctgt	cagttccaaa	cgtaaaacgg	cttgcggccgc	10440
gtcatcgccg	ggggtcataa	cgtgactccc	ttaattctcc	gctcatgatc	ttgatcccc	10500
gcgcctatcag	atccttggcg	gcaagaaagc	catccagttt	actttgcagg	gcttcccaac	10560
cttaccagag	ggcgccccag	ctggcaattc	cggttcgctt	gctgtccata	aaaccgcccc	10620
gtctagctat	cgccatgtaa	gcccaactgca	agctacctgc	tttcttttg	cgcttgcgtt	10680
ttcccttgc	cagataggccc	agtagctgac	attcatccgg	ggtcagcacc	gtttctgcgg	10740

actggctttc tacgtgttcc gc当地cctta gc当地ccctg cgccctgagt gcttgc当地ca	10800
gc当地gaagct tgc当地gc当地 caggtcgacg gcg当地ccgag ctc当地cgagc aaat当地tacac	10860
at当地gccacta aacgtctaaa cc当地ttaat tt当地tttgt tttactatgt gt当地ttatgta	10920
ttt当地gattgc gataaatttt tatat当地ggc actaaattta taacacctt tatgctaaacg	10980
ttt当地ccaaca ct当地gcaatt tgcaagttga ttaattgatt ctaaatttatt tttgtcttct	11040
aaat当地acat actaatcaac tggaaatgta aatat当地tgc aatat当地cta ct当地aggaga	11100
attaaagtga gt当地aatatgg taccacaagg tt当地ggagatt taat当地ttgc aatgctgcat	11160
ggat当地ggcata tacaccaaacc attcaataat tcttgaggat aataatggta ccacacaaga	11220
ttt当地gagggtgc atgaaacgtca cgtggacaaa agg当地tttagta attttcaag acaacaatgt	11280
taccacacac aag当地tttgag gt当地catgcat ggat当地ccctg tggaaagttt aaaaatattt	11340
tggaaatgat tt当地catggaa gccatgtaaa aaccatgac atccacttgg aggatgcaat	11400
aatgaagaaa actacaaatt tacatgcaac tagttatgca tggatgtctat ataatgagga	11460
ttttgcaata ct当地ttcattca tacacactca ctaagtttta cacgattata atttcttcat	11520
agccagcaga tctgcccggca tc当地atcccgg gccatggcct gctttaatga gatatgcfag	11580
acgc当地tatga tc当地catgata tt当地gtttca attctgttgc acatgttgc aaaaacctga	11640
gc当地atgttag ctc当地agatcct tacccgggt ttc当地ggttcat tctaataatgaa atatcaccgg	11700
ttactatcgt attt当地tatga ataataattct cc当地ttcaatt tactgattgt cc当地tc当地gacga	11760
gctc当地ggc当地cg cctctagagg atc当地gatgaaat tcaatgc当地tgc当地 tgatggc当地tcc当地aacgtt	11820
gc当地gggttctgt cagttccaaa cgtaaaacgg ct当地gtcccgc gtc当地atgc当地 ggggtcataaa	11880
cgtgactccc ttaattctcc gctcatgatc agattgtcgt tt当地ccgc当地ttaatgaa	11940
tatc当地agtgtt tgacaggata tattggc当地ggg taaacctaag agaaaagagc gtttattaga	12000
ataatcggat atttaaaagg gc当地gtgaaaag gtttatacctt cgtccatttg tatgtgcatg	12060
ccaaccacag ggttcccca	12079

<210> 30
<211> 13002
<212> DNA
<213> artificial sequence

```
<220>
<221> misc_feature
<222> (1)..(13002)
```

<223> plant expression vector with two promoter-terminator expression cassettes

<400> 30	
gatctggcgc cggccagcga gacgagcaag attggccgcc gcccgaaacg atccgacagc	60
gcgcccagca caggtgcgca ggcaaattgc accaacgcac acagcgccag cagaatgcc	120
tagtggcggt tgacgtcggt cgagtgaacc agatcgca ggaggcccg cagcacccgc	180
ataatcaggc cgatgcccac agcgtcgagc gcgcacagtgc tcagaattac gatcagggt	240
atgttgggtt tcacgtctgg cctccggacc agcctccgct ggtccgattt aacgcgcgga	300
ttctttatca ctgataagtt ggtggacata ttatgtttt cagtataaaa gtgtcaagca	360
tgacaaaagtt gcagccaat acagtgtatcc gtgcccctt ggacctgtt aacgaggctg	420
gcgttagacgg tctgacgaca cgcaaaactgg cggaacggtt gggggttcag cagccggcgc	480
tttactggca cttcaggaac aagcgggcgc tgctcgacgc actggccgaa gccatgtgg	540
cggagaatca tacgcattcg gtgccgagag ccgacgacga ctggcgctca tttctgtatcg	600
ggaatgccc cagttcagg caggcgctgc tcgccttaccg cgatggcgcc cgcatccatg	660
ccggcacgcg accggcgca ccgcagatgg aaacggccga cgcgacgtt cgcttcctct	720
gcgaggcggg ttttcggcc ggggacgccc tcaatgcgt gatgacaatc agtacttca	780
ctgttgggc cgtgcttgag gaggcggccg gcgcacgcga tgccggcgag cgccggcggca	840
ccgttgaaca ggctccgctc tcgcccgtgt tgccggccgc gatagacgcc ttgcacgaag	900
ccggtccgga cgcagcggtc gaggcaggac tcgcgggtat tgtcgtatggaa ttggcgaaaa	960
ggaggctcggt tgtcaggaac gttgaaggac cgagaaagg tgacgattga tcaggaccgc	1020
tgccggagcg caacccactc actacagcag agccatgtat acaacatccc ctccccctt	1080
ccaccgcgtc agacgcccgt agcagccgc tacggcttt ttcattgcctt gcccgtcggt	1140
ccaaaggctca cggccgcgtc cggcctctctt ggcggcccttc tggcgcttcc cgccttcctc	1200
gctcaactgac tcgctgcgtc cggcggttcg gctgcggcgaa gcggtatcg ctcactcaaa	1260
ggcggtataa cggttatcca cagaatcagg ggataacgcga ggaaagaaca tgtgagcaaa	1320
aggccagcaa aaggccagga accgtaaaaaa ggccgcgttg ctggcggttt tccataggct	1380
ccgccccctt gacgagcatc acaaaaaatcg acgctcaagt cagaggtggc gaaacccgac	1440
aggactataa agataaccagg cgtttcccccc tggaagctcc ctcgtgcgtc ctccgtttcc	1500
gaccctgccc cttaccggat acctgtccgc ctttctccct tcggaaagcg tggcgctttt	1560
ccgctgcata accctgcttc ggggtcatta tagcgatttt ttccgtatataat ccattttttt	1620

tcgcacgata tacaggattt tgccaaaggg ttcgtgtaga ctttccttgg tgtatccaac	1680
ggcgtcagcc gggcaggata ggtgaagtag gcccacccgc gagcgggtgt tccttcttca	1740
ctgtccctta ttccgcacctg gcggtgctca acgggaatcc tgctctgcga ggctggccgg	1800
ctaccgcccgg cgtaacagat gaggcaagc gcatggctga taaaaccaag ccaaccagga	1860
aggcagccc acctatcaag gtgtactgcc ttccagacga acgaagagcg attgaggaaa	1920
aggcggcggc ggccggcatg agcctgtcgg cctacctgct ggccgtcggc caggctaca	1980
aaatcacggg cgtcgtggac tatgagcacg tccgcagact ggccgcacatc aatggcgacc	2040
tggccgcct gggccgcctg ctgaaactct ggctcaccga cgaccgcgc acggcgcgg	2100
tcggtgatgc cacgatcctc gccctgctgg cgaagatcga agagaagcag gacgagctt	2160
gcaaggtcat gatgggcgtg gtccgcccga gggcagagcc atgactttt tagccgctaa	2220
aacggccggg gggtcgcgt gattgccaag cacgtccccca tgcgctccat caagaagagc	2280
gacttcgcgg agctggtaa gtacatcacc gacgagcaag gcaagaccga ggcgccttgc	2340
gacgctcacc gggctggttg ccctcgccgc tggctggcg gccgtctatg gccctgcaaa	2400
cgcgccagaa acgcccgtcga agccgtgtgc gagacaccgc ggccgcggc gttgtggata	2460
cctcgcggaa aacttggccc tcactgacag atgagggcg gacgttgaca cttgagggc	2520
cgactcaccc ggccgcgcgt tgacagatga gggcaggct cgatttcggc cggcgcacgt	2580
gagctggcca gcctcgaaa tcggcgaaaa cgcctgattt tacgcgagtt tcccacagat	2640
gatgtggaca agcctggga taagtgcctt gcggtattga cacttgagg ggcgcactac	2700
tgacagatga gggcgcgt cttgacact tgagggcag agtgcgtaca gatgagggc	2760
gcacctattt acatttgagg ggctgtccac aggcaaaaa tccagcatt gcaagggttt	2820
ccgcccgttt ttccggcacc gctaacctgt cttaaacct gctttaaac caatatttt	2880
aaaccttgtt tttaaccagg gctgcgcctt gtgcgcgtga cgcgcacgc cgaaggggg	2940
tgccccccct tctcgaaaccc tcccgcccg ctaacgcggg cctccatcc cccaggggc	3000
tgccgcgcgc ggccgcgaac ggcctcaccc caaaaatggc agcgcgtggca gtccttgc	3060
ttggccggat cggggcagta acgggatggg cgatcagccc gagcgcgcacg cccgaaagca	3120
ttgacgtgcc gcaggtgctg gcatcgacat tcagcgacca ggtgccggc agtggggcg	3180
gccccctggg tggccgcctg cccttcactt cggccgtcgg ggcattcacg gacttcatgg	3240
cgccccggc aatttttacc ttggcattc ttggcatagt ggtgcgggt gccgtgc	3300
tgttcggggg tgcgataaac ccagcgaacc atttgggttg ataggtaa ttataccgag	3360

gtatgaaaac gagaattgga cctttacaga attactctat gaagcgccat atttaaaaag	3420
ctaccaagac gaagaggatg aagaggatga ggaggcagat tgccttgaat atattgacaa	3480
tactgataag ataatatatc ttttatata tag aagatatcg cgtatgtaa gatttcaggg	3540
ggcaaggcat aggcagcgcg cttatcaata tatctataga atgggcaaag cataaaaact	3600
tgcattggact aatgcttcaa acccaggaca ataaccattt agcttgtaaa ttctatcata	3660
atgggtaat gactccaact tattgatgt gttttatgtt cagataatgc ccgatgactt	3720
tgtcatgcag ctccaccat tttgagaacg acagcgactt ccgtcccagc cgtgccaggt	3780
gctgcctcag attcaggtt tgccgctcaa ttgcgtgcgt atatcgcttg ctgattacgt	3840
gcagcttcc cttcaggcgg gattcataca gcccgcagcc atccgtcatc catabacca	3900
cgtcaaagg tgacagcagg ctcataagac gcccagcgt cgccatagtg cggttaccga	3960
atacgtgcgc aacaaccgtc ttccggagac tgtcatacgc gtaaaacagc cagcgtggc	4020
gcgattttagc cccgacatag cccactgtt cgtccatttc cgccgcagacg atgacgtcac	4080
tgcccgctg tatgcgcgag gttaccgact gcccgcgtt gtttttaagt gacgtaaaat	4140
cgtgttgggg ccaacgccc taatgcgggc tggtggccgg catccaacgc cattcatggc	4200
cataatcaatg attttctggc gcttaccggg ttgagaagcg gtgttaagtga actgcagttt	4260
ccatgtttta cggcagttag agcagagata gcccgcgtt ccggcgggtgc ttttgcgtt	4320
acgcaccacc cggcagttag ctgaacagga gggacagctg atagacacag aagccactgg	4380
agcacctcaa aaacaccatc atacactaaa tcagtaagtt ggcagcatca cccataattg	4440
tggtttcaaa atcggctccg tcgataactat gttatacgcc aactttgaaa acaactttga	4500
aaaagctgtt ttctggatt taagtttta gaatgcaagg aacagtgaat tggagttcg	4560
cttggttataa ttagcttctt ggggtatctt taaatactgt agaaaagagg aagggaaataa	4620
taaatggcta aaatgagaat atcaccggaa ttgaaaaac tgatcgaaaa ataccgctgc	4680
gtaaaagata cggaaggaat gtctcctgct aaggtatata agctgggtgg agaaaatgaa	4740
aacctatatt taaaatgac ggacagccgg tataaaggga ccacctatga tgtggAACGG	4800
gaaaaggaca tgatgtatg gctggaaagg aagctgcctg ttccaaaggt cctgcacttt	4860
gaacggcattt atggctggag caatctgctc atgagtgagg ccgtggcgt ctttgcgt	4920
gaagagtgatg aagatgaaca aagccctgaa aagattatcg agctgtatgc ggagtgcac	4980
aggcttttc actccatcga catatcgat tgcctata cgaatagctt agacagccgc	5040

ttagccgaat tggattactt actgaataac gatctggccg atgtggattg cgaaaactgg	5100
gaagaagaca ctccattnaa agatccgcgc gagctgtatg attttttaaa gacggaaaag	5160
cccgaaagagg aacttgcctt ttcccacggc gacctggag acagcaacat ctttgtaaaa	5220
gatggcaaag taagtggctt tattgatctt gggagaagcg gcagggcgga caagtggat	5280
gacattgcct tctgcgtccg gtcgatcagg gaggatatcg gggagaaca gtagtgcag	5340
ctatttttg acttactgg gatcaagcct gattggaga aaataaaaata ttatatttt	5400
ctggatgaat tggttagta cctagatgtg gcgcaacgat gccggcgaca agcaggagcg	5460
caccgacttc ttccgcatca agtgtttgg ctctcaggcc gaggcccacg gcaagtattt	5520
ggccaagggg tcgctggat tcgtgcaggg caagattcg aataccaaat acgagaagga	5580
cggccagacg gtctacggga ccgacttcat tgccgataag gtggattatc tggacaccaa	5640
ggcaccaggc gggtaaatc aggaataagg gcacattgcc ccggcgtgag tcggggcaat	5700
cccgcaagga gggtaatga atcggacgtt tgaccgaaag gcatacaggc aagaactgat	5760
cgacgcgggg tttccgccc aggatgccga aaccatcgca agccgcaccc tcattgcgtgc	5820
cccccgcaa accttccagt ccgtcggtc gatggtccag caagctacgg ccaagatcga	5880
gacgcacagc gtgcaactgg ctccccctgc cctgcccgcg ccattggccg ccgtggagcg	5940
ttcgcgtcgt ctcgaacagg aggcggcagg tttggcgaag tcgatgacca tcgacacgcg	6000
aggaactatg acgaccaaga agcgaaaaac cgccggcgag gacctggcaa aacaggtcag	6060
cgaggccaa caggccgcgt tgctgaaaca cacgaagcag cagatcaagg aaatgcagct	6120
ttccttgttc gatattgcgc cgtggccgga cacgatgcga gcgatgccaa acgacacggc	6180
ccgctctgcc ctgttacca cgcgcaacaa gaaaatcccg cgcgaggcgc tgcaaaacaa	6240
ggtcattttc cacgtcaaca aggacgtgaa gatcacctac accggcgctcg agctgcggc	6300
cgacgatgac gaactgggt ggcagcaggt gttggagtac gcgaagcgca cccctatcg	6360
cgagccgatc accttacgt tctacgagct ttgccaggac ctgggctggt cgatcaatgg	6420
ccggattac acgaaggccg aggaatgcct gtcgcgccta caggcgacgg cgatggctt	6480
cacgtccgac cgcttgggc acctggaatc ggtgtcgctg ctgcaccgct tccgcgtcct	6540
ggaccgtggc aagaaaacgt cccgttgcca ggtcctgatc gacgaggaaa tcgtcggtct	6600
gtttgctggc gaccactaca cgaattatcat atgggagaag taccgcaagc tgcgcgcac	6660
ggcccgacgg atgttcgact atttcagctc gcaccggag ccgtacccgc tcaagctgga	6720
aaccttccgc ctcatgtgcg gatcggattc caccggcgatc aagaagtggc gcgagcaggt	6780

cggcgaagcc	tgcgaagagt	tgcgaggcag	cggcctggtg	gaacacgcct	gggtcaatga	6840	
tgacctggtg	cattgcaaac	gctagggcct	tgtgggtca	gttccggctg	ggggttcagc	6900	
agccagcgct	ttactggcat	ttcaggaaca	agcgggcact	gctcgacgca	cttgcttcgc	6960	
tca	gtatcgc	tcgggacgca	cggcgctc	tacgaactgc	cgataaacag	aggattaaaa	7020
ttgacaattg	tgattaaggc	tcagattcga	cggcttggag	cggccgacgt	gcaggatttc	7080	
cgcgagatcc	gattgtcggc	cctgaagaaa	gctccagaga	tgttcgggtc	cgtttacgag	7140	
cacgaggaga	aaaagccat	ggaggcggtc	gctgaacggt	tgcgagatgc	cgtggcattc	7200	
ggcgcctaca	tcgacggcga	gatcattggg	ctgtcggtct	tcaaacagga	ggacggcccc	7260	
aaggacgctc	acaaggcgca	tctgtccggc	gttttcgtgg	agcccgaaca	gcgaggccga	7320	
gggtcgccg	gtatgctgct	gccccgttg	ccggcggtt	tattgctcg	gtatgcgtc	7380	
cgacagattc	caacggaaat	ctggtgatg	cgcacatttca	tcctcgccgc	acttaatatt	7440	
tcgctattct	ggagcttgg	gtttatttcg	gtctaccgccc	tgccgggggg	ggtcgeggcg	7500	
acggtaggcg	ctgtgcagcc	gctgatggtc	gtgttcatct	ctgcccgtct	gctaggtagc	7560	
ccgatacgt	tgtggcggt	cctggggcgt	atttgcggaa	ctgcgggcgt	ggcgctgttg	7620	
gtgttgacac	caaacgcagc	gctagatcct	gtcggcgctg	cagcgggcct	ggcggggcg	7680	
gtttccatgg	cgttcggaac	cgtgctgacc	cgcaagtggc	aacctcccgt	gcctctgctc	7740	
acctttacgg	cctggcaact	ggcgccggaa	ggacttctgc	tcgttccagt	agcttttagtg	7800	
tttgcgttgc	caatcccgat	gcctacagga	accaatgttc	tcggcctggc	gtggctcgcc	7860	
ctgatcgag	cgggttaac	ctacttcctt	tggttccggg	ggatctcg	actcgAACCT	7920	
acagttgttt	cottactggg	ctttctcagc	cccagatctg	gggtcgatca	gccggggatg	7980	
catcaggccg	acagtcggaa	cttcgggtcc	ccgacatgt	ccattcggtg	agcaatggat	8040	
aggggagttg	atatcgtaa	cgttcaatcc	taaagaaata	gcccactca	gtttccctcag	8100	
cggctttatc	cagcgatttc	ctattatgtc	ggcatagttc	tcaagatcg	cagcctgtca	8160	
cggtaagcg	agaaatgaat	aagaaggctg	ataatcgga	tctctgcgag	ggagatgata	8220	
tttgcgttgc	ggcagcaacg	ctctgtcattc	gttacaatca	acatgctacc	ctccgcgaga	8280	
tcatccgtgt	ttcaaaccgg	gcagcttagt	tgccgttctt	ccgaatagca	tcggtaacat	8340	
gagcaaagtc	tgccgcctta	caacggctct	cccgctgacg	ccgtcccgaa	ctgatggct	8400	
gcctgtatcg	agtggtgatt	ttgtgccgag	ctgcccgtcg	gggagctgtt	ggctggctgg	8460	

tggcaggata tattgtggtg taaacaaatt gacgcttaga caacttaata acacattgcg	8520
gacgtttta atgtactggg gtggttttc ttttccaccag tgagacgggc aacagctgat	8580
tgcccttcac cgccctggccc tgagagagtt gcagcaagcg gtccacgctg gtttgcggca	8640
gcaggcgaaa atcctgtttg atgggtggttc cgaaatcggc aaaatccctt ataaatcaaa	8700
agaatagccc gagatagggt tgagtgttgc tccagttgg aacaagagtc cactattaa	8760
gaacgtggac tccaacgtca aaggcgaaa aaccgtctat cagggcgatg gcccactacg	8820
tgaaccatca cccaaatcaa gtttttggg gtcgaggtgc cgtaaagcac taaatcgaa	8880
ccctaaaggg agcccccgat ttagagcttgc acggggaaag cccgcgaacg tggcgagaaa	8940
ggaagggaaag aaagcgaaag gagcgggcgc cattcaggct gcgcactgt tgggaaggc	9000
gatcggtgcg ggcctttcg ctattacgccc agctggcgaa agggggatgt gctgcaaggc	9060
gattaagttg ggttaacgcca gggtttccc agtcacgacg ttgtaaaacg acggccagtg	9120
aattaattcc catcttggaaa gaaatatagt ttaaatattt attgataaaaa taacaagtca	9180
ggtattatag tccaagcaaa aacataaatt tattgatgca agtttaaatt cagaaatatt	9240
tcaataactg attatatcag ctggtagatc gccgttagatg aaagactgag tgcgatatta	9300
tgtgtaatac ataaaattgtat gatatacgta gcttagctca tcgggggatc cgtcgaagct	9360
agcttgggtc ccgctcagaa gaactcgatca agaaggcgat agaaggcgat gcgcgtcgaa	9420
tcgggagcgg cgataccgta aagcacgagg aagcggtcag cccattcgcc gccaagctct	9480
tcagcaatat cacgggttagc caacgctatgc tcctgatagc ggtccgcccac acccagccgg	9540
ccacagtcga tgaatccaga aaagcgccca tttccacca tgatattcgg caagcaggca	9600
tcgccccatggg tcacgacgag atcctcgccg tcgggcatgc gcgccttgcg cctggcgaaac	9660
agttcggctg gcgcgagccc ctgatgctct tcgtccagat catcctgatc gacaagaccg	9720
gcttccatcc gagtagtgc tcgctcgatg cgatgttcg cttgggtggc gaatgggcag	9780
gtagccggat caagcgatgc cagccgcccgc attgcatcag ccatgatgga tactttctcg	9840
gcaggagcaa ggtgagatga caggagatcc tgccccggca ctgcggccaa tagcagccag	9900
tcccttcccg cttcagtgac aacgtcgagc acagctgcgc aaggaacgcc cgtcgtggcc	9960
agccacgata gccgcgtgc ctcgtcctgc agttcattca gggcacccgga caggtcggtc	10020
ttgacaaaaaa gaaccggcgccc cccctgcgc gacagccgga acacggcgac atcagagcag	10080
ccgattgtct gttgtgccc gtcatagccg aatagcctct ccacccaagc ggccggagaa	10140
cctgcgtgca atccatcttgc ttcaatccaa gctccatgg gccctcgact agagtcgaga	10200

cacctttat gctaacgtt gccaacactt agcaattgc aagttgatta attgattcta 11940
 aattattttt gtcttctaaa tacatatact aatcaactgg aatgtaaat atttgcta 12000
 atttctacta taggagaatt aaagtgagtg aatatggta cacaaggttt ggagattta 12060
 ttgttgcaat gctgcatgga tggcatatac accaaacatt caataattct tgaggata 12120
 aatggtacca cacaagattt gaggtgcatt aacgtcacgt ggacaaaagg tttagtaatt 12180
 tttcaagaca acaatgttac cacacacaag ttttgggtt catgcatgga tgccctgtgg 12240
 aaagttaaa aatattttgg aatgtatttgc catgaaagcc atgtgtaaaa ccatgacatc 12300
 cacttgagg atgcaataat gaagaaaact acaaatttac atgcaactag ttatgcatgt 12360
 agtctatata atgaggattt tgcaataactt tcattcatac acactcacta agtttacac 12420
 gattataatt tcttcatacg cagcggatcc gatatcgggc ccgctagcgt taaccctgct 12480
 ttaatgagat atgcgagacg cctatgatcg catgatattt gcttcaatt ctgttgca 12540
 cgttgtaaaa aacctgagca tgtgttagctc agatccttac cgccggtttc ggttcattct 12600
 aatgaatata tcacccgtta ctatcgattt tttatgaata atattctccg ttcaatttac 12660
 tgattgtccg tcgacgaatt cgagctcggc gcgcctctag aggatcgatg aattcagatc 12720
 ggctgagtgg ctccctcaac gttgcgggttc tgtcagttcc aaacgtaaaa cggcttgc 12780
 cgctgtcatcg gccccgggtca taacgtgact cccttaatttccgcctcatg atcagattgt 12840
 cgtttccgc cttagttta aactatcagt gtttgcagg atatattggc gggtaaacct 12900
 aagagaaaaag agcgtttattt agaataatcg gatattttaa agggcgtgaa aaggtttatc 12960
 ctctcgccat ttgtatgtgc atgccaacca cagggttccc ca 13002

<210> 31
 <211> 13905
 <212> DNA
 <213> artificial sequence

<220>
 <221> misc_feature
 <222> (1)..(12085)
 <223> plant expression vector with three promoter-terminator expression cassettes

<400> 31
 gatctggcgc cggccagcga gacgagcaag attggccgccc gcccggaaacg atccgacagc 60
 gcgcccagca caggtgcgcga ggcaattgc accaacgcac acagcgccag cagaatgc 120
 tagtggcgg tgacgtcggtt cgagtgaacc agatcgccga ggaggcccgg cagcaccggc 180

ataatcagggc	cgatgccgac	agcgtcgagc	gcgacagtgc	tcagaattac	gatcaggggt	240
atgttgggtt	tcacgtctgg	cctccggacc	agcctccgct	ggtccgattg	aacgcgcgga	300
ttctttatca	ctgataagtt	ggtggacata	ttatgtttat	cagtataaaa	gtgtcaagca	360
tgacaaaagtt	gcagccgaat	acagtgatcc	gtgccgcct	ggacctgttg	aacgaggtcg	420
gcgttagacgg	tctgacgaca	cgcaaactgg	cggaacggtt	gggggttcag	cagccggcgc	480
tttactggca	cttcaggaac	aagcgggcgc	tgctcgacgc	actggccgaa	gccatgctgg	540
cggagaatca	tacgcattcg	gtgccgagag	ccgacgacga	ctggcgctca	tttctgatcg	600
ggaatgcccgg	cagtttcagg	caggcgctgc	tcgcctaccg	cgatggcgcg	cgcatccatg	660
ccggcacgcg	accggggcgca	ccgcagatgg	aaacggccga	cgcgcagctt	cgcttcctct	720
gcgaggcggg	tttttcggcc	ggggacgcccgg	tcaatgcgcgt	gatgacaatc	agctacttca	780
ctgttggggc	cgtgcttgag	gagcaggccg	gcpacagcga	tgccggcgag	cgcggcggca	840
ccgttgaaca	ggctccgctc	tcgcccgtgt	tgccggccgc	gatacacgcc	ttcgacgaag	900
ccggtccgga	cgcagcgttc	gagcagggac	tcgcgggtat	tgtcgatgga	ttggcgaaaa	960
ggaggctcgt	tgtcaggaac	gttgaaggac	cgagaaaggg	tgacgattga	tcaggaccgc	1020
tgccggagcg	caacccactc	actacagcag	agccatgtag	acaacatccc	ctcccccttt	1080
ccaccgcgtc	agacgcccgt	agcagccccgc	tacggcttt	ttcatgcct	gccctagcgt	1140
ccaaaggctca	cggccgcgct	cggcctctct	ggccgccttc	tggcgcttt	ccgcttcctc	1200
gctcaactgac	tcgctgcgcgt	cggtcgttcg	gctgcggcga	gcggtatcag	ctcactcaaa	1260
ggcggtataa	cgttatcca	cagaatcagg	ggataacgca	ggaaagaaca	tgtgagcaaa	1320
aggccagcaa	aaggccagga	accgtaaaaaa	ggccgcgttg	ctggcgtttt	tccataggct	1380
ccgccccccct	gacgagcatc	acaaaaatcg	acgctcaagt	cagaggtggc	gaaacccgac	1440
aggactataa	agataaccagg	cgtttcccc	tggaagctcc	ctcgtgcgt	ctcctgttcc	1500
gaccctgcgg	cttaccggat	acctgtccgc	ctttctccct	tcggaaagcg	tggcgcttt	1560
ccgctgcata	accctgcttc	ggggtcatta	tagcgatttt	ttcggtatat	ccatccttt	1620
tcgcacgata	tacaggattt	tgccaaaggg	ttcgtgtaga	ctttccttgg	tgtatccaac	1680
ggcggtcagcc	gggcaggata	ggtgaagtag	gcccacccgc	gagcgggtgt	tccttcttca	1740
ctgtccctta	ttcgcacctg	gccccgtctca	acggaaatcc	tgctctgcga	ggctggccgg	1800
ctaccgcgg	cgtaacagat	gagggcaagc	ggatggctga	tgaaacccaag	ccaaccagga	1860

agggcagccc accttatcaag gtgtactgcc ttccagacga acgaagagcg attgaggaaa	1920
aggcggcggc ggccggcatg agcctgtcgg cctacctgct ggccgtcggc cagggctaca	1980
aaatcacggg cgtcgtggac tatgagcacg tccgcgagct ggcccgcatc aatggcgacc	2040
tggccgcct gggcggcctg ctgaaaactct ggctcaccga cgaccgcgc acggcgcggt	2100
tcggtgatgc cacgatcctc gccctgctgg cgaagatcga agagaagcag gacgagctt	2160
gcaaggtcat gatgggcgtg gtccgcccga gggcagagcc atgactttt tagccgctaa	2220
aacggccggg gggtcgcgt gattgccaag cacgtccccca tgcgctccat caagaagagc	2280
gacttcgcgg agctggtgaa gtacatcacc gacgagcaag gcaagaccga ggcgccttgc	2340
gacgctcacc gggctgggtt ccctcgccgc tggcgtggcg gccgtctatg gccctgcaaa	2400
cgcgcagaa acgcccgtcga agccgtgtgc gagacaccgc ggccgcggc gttgtggata	2460
cctcgcggaa aacttggccc tcactgacag atgagggcg gacgttgaca cttgaggggc	2520
cgactcaccc ggccggcgt tgacagatga gggcaggct cgatttcggc cggcgcacgtg	2580
gagctggcca gcctcgcaaa tcggcggaaa cgcctgattt tacgcgagtt tcccacagat	2640
gatgtggaca agcctggga taagtgcct gcggatttgc cacttgaggg ggcgcactac	2700
tgacagatga gggcgcgat ctttgacact tgagggcgag agtgcgtaca gatgaggggc	2760
gcacctattt acatttgagg ggctgtccac aggcaaaaa tccagcattt gcaagggttt	2820
ccgccccgtt ttccggccacc gctaaccctgt ctttaacct gctttaaac caatatttat	2880
aaaccttgtt tttaaccagg gtcgcgcctt gtgcgcgtga cgcgcacgc cgaagggggg	2940
tgccccccct tctcgaaccc tcccgcccg ctaacgcggg cctccatcc ccccaaggggc	3000
tgccccctc ggccgcgaac ggccctcaccc caaaaatggc agcgctggca gtccttgcca	3060
ttgcccggat cggggcagta acgggatggg cgatcagccc gagcgcgcacg cccggaagca	3120
ttgacgtgcc gcaggtgtcgt gcatcgacat tcagcgacca ggtgcgggc agtggggcg	3180
gcggcctggg tggcggcctg cccttcactt cggccgtcgg ggcattcacg gacttcatgg	3240
cggggccggc aatttttacc ttgggcattt ttggcatagt ggtgcgggt gccgtgctcg	3300
tgttcggggg tgcgataaac ccagcgaacc atttgagggtg ataggtaaga ttataccgag	3360
gtatgaaaac gagaattgga ctttacaga attactctat gaagcgccat attaaaaag	3420
ctaccaagac gaagaggatg aagaggatga ggaggcagat tgccttgaat atattgacaa	3480
tactgataag ataatatatc ttttatatac aagatatcgc cgtatgtaa gatttcaggg	3540
ggcaaggcat aggcagcgcg cttatcaata tatctataga atgggcaaaag cataaaaaact	3600

tgcatggact aatgctgaa acccaggaca ataaccctat agcttgtaaa ttctatcata	3660
attgggtaat gactccaact tattgatagt gtttatgtt cagataatgc ccgatgactt	3720
tgtcatgcag ctccaccat tttgagaacg acagcgactt ccgtcccagc cgtgccaggt	3780
gctgcctcag attcaggtt tgccgctcaa ttcgctgcgt atatcgcttgc tgattacgt	3840
gcagcttcc ctccaggcgg gattcataca gcggccagcc atccgtcatc catatcacca	3900
cgtcaaaggg tgacagcagg ctcataagac gccccagcgt cgccatagtg cggttaccga	3960
atacgtgcgc aacaaccgtc ttccggagac tgtcatacgc gtaaaacagc cagcgtggc	4020
gcgatttagc cccgacatag ccccactgtt cgtccatttc cgccgagacg atgacgtcac	4080
tgcccggtg tatgcgcgag gttaccgact gcggcctgag ttttttaagt gacgtaaaat	4140
cgtgttggagg ccaacgccc taatgcgggc tgttggccgg catccaacgc cattcatggc	4200
catatcaatg attttctggc gcttaccggg ttgagaagcg gtgttaagtga actgcagttg	4260
ccatgtttta cggcagttag agcagagata gcgcgtatgt ccggcggtgc ttttgcgtt	4320
acgcaccacc ccgtcagtag ctgaacagga gggacagctg atagacacag aagccactgg	4380
agcacctcaa aaacaccatc atacactaaa tcaagtaagtt ggcagcatca cccataattg	4440
tggtttcaaa atcggctccg tcgatactat gttatacgcc aactttgaaa acaactttga	4500
aaaagctgtt ttctggatt taaggtttta gaatgcaagg aacagtgaat tggagttcgt	4560
cttggttataa tttagcttctt ggggtatctt taaatactgt agaaaagagg aagggaaataa	4620
taaatggcta aaatgagaat atcaccggaa ttgaaaaaac tgatcgaaaa ataccgctgc	4680
gtaaaaagata cggaaaggaat gtctcctgct aaggtatata agctgggtgg agaaaatgaa	4740
aacctatatt taaaaatgac ggacagccgg tataaaggga ccacctatga tgtggaacgg	4800
gaaaaggaca tgatgctatg gctggaagga aagctgcctg ttccaaagggt cctgcacttt	4860
gaacggcatg atggctggag caatctgctc atgagtgagg ccgatggcgt ctttgctcg	4920
gaagagatgt aagatgaaca aagccctgaa aagattatcg agctgtatgc ggagtgcac	4980
aggcttttc actccatcga catatcgat tgcctata cgaatagctt agacagccgc	5040
ttagccgaat tggattactt actgaataac gatctggccg atgtggattt cgaaaactgg	5100
gaagaagaca ctccattaa agatccgcgc gagctgtatg atttttaaa gacggaaaag	5160
cccgaaagagg aacttgcctt ttcccacggc gacctgggag acagcaacat ctttgtaaaa	5220
gatggcaaag taagtggctt tattgatctt gggagaagcg gcagggcggc caagtggat	5280

gacattgcct tctgcgtccg gtcgatcagg gaggatatcg ggaaagaaca	gtatgtcgag	5340
ctatTTTTG acttactggg gatcaagcct gattggaga aaataaaata ttatattta		5400
ctggatgaat tgTTTtagta cctagatgtg gcgcaacgat gccggcgaca	agcaggagcg	5460
caccgacttc ttccgcatca agtgtttgg ctctcaggcc gaggcccacg	gcaagtattt	5520
gggcaagggg tcgctggtat tcgtgcaggg caagattcg aataccaagt	acgagaagga	5580
cggccagacg gtctacggga ccgacttcat tgccgataag gtggattatc	tggacaccaa	5640
ggcaccaggc gggtaaaatc aggaataagg gcacattgcc ccggcgtgag	tcggggcaat	5700
cccgcaagga gggtaatga atcggacgtt tgaccggaag gcatacaggc	aagaactgat	5760
cgacgcgggg tttccgccc aggatgccga aaccatcgca agccgcaccc	tcatgcgtgc	5820
gccccgcgaa accttcagt ccgtcggctc gatggtccag caagctacgg	ccaagatcga	5880
gcfgacagc gtgcaactgg ctccccctgc cctgcccgcg ccatcgccg	ccgtggagcg	5940
ttcgcgtcgt ctgcAACAGG aggccggcagg tttggcgaag tcgatgacca	tcgacacgcg	6000
aggaactatg acgaccaaga agcgaaaaac cgccggcgag gacctggcaa	aacaggtcag	6060
cgaggccaag caggccgcgt tgctgaaaca cacgaagcag cagatcaagg	aaatgcagct	6120
ttcTTTgttc gatattgcgc cgtggccgga cacgatgcga	gcgatgccaa acgacacggc	6180
ccgctctgcc ctgttacca cgcgcaacaa gaaaatccc	cgcgaggcgc tgcaaaacaa	6240
ggTCATTTc cacgtcaaca aggacgtgaa gatcacctac	accggcgtcg agctgcggc	6300
cgacgatgac gaactggtgt ggcagcaggt gttggagtac	gcgaagcgca cccctatcgg	6360
cgagccgatc acttcacgt tctacgagct ttgccaggac	ctgggctggt cgatcaatgg	6420
ccggTattac acgaaggccg aggaatgcct gtcgcgccta	caggcgacgg cgatggcTT	6480
caCGTCCGAC cgcgTTggc acctggaatc ggtgtcgctg	ctgcaccgct tccgcgtcct	6540
ggaccgtggc aagaaaacgt cccgttgcca ggtcctgatc	gacgaggaaa tcgtcgtgct	6600
gtttgctggc gaccactaca cgaaattcat atggagaag	tacccgcaagc tgcgcggac	6660
ggcccgacgg atgttcgact atttcagctc	gcaccggag ccgtacccgc tcaagctgga	6720
aaccttccgc ctcatgtgcg gatcgattc	cacccgcgtg aagaagtggc	6780
cggcgaagcc tgcgaagagt tgcgaggcag	cgccctggtg gaacacgcct	6840
tgacctggtg cattgcaaac gctagggcct	tgtgggtca gttccggctg	6900
agccagcgct ttactggcat ttcaggaaca	agcgggcact gtcgacgca	6960

tcagtatcgc tcgggacgca cggcgcgctc tacgaactgc cgataaacag aggattaaaa	7020
ttgacaattg tgattaaggc tcagattcga cggctggag cggccgacgt gcaggattc	7080
cgcgagatcc gattgtcggc cctgaagaaa gctccagaga tgttcgggtc cgttacgag	7140
cacgaggaga aaaagcccat ggaggcggtc gctgaacggt tgcgagatgc cgtggcattc	7200
ggcgcctaca tcgacggcga gatcattggg ctgtcggtct tcaaacagga ggacggcccc	7260
aaggacgctc acaaggcgca tctgtccggc gtttcgtgg agcccgaaca gcgaggccga	7320
ggggtcgccg gtatgctgct gcgggcgtt ccggcggtt tattgctgt gatgatgctc	7380
cgacagattc caacggaaat ctggtggatg cgcatttca tcctcggcgc acttaatatt	7440
tcgctattct ggagcttgtt gtttatttcg gtctaccgccc tgccggcgg ggtcgccgc	7500
acggtaggcg ctgtcagcc gctgatggtc gtgttcatct ctgcccgtct gctaggttagc	7560
ccgatacgt ttagggcggt cctgggggct atttgcggaa ctgcggcggt ggcgtgttg	7620
gtgttgcacac caaacgcagc gctagatcct gtcggcgtcg cagcggcct ggcggggcgc	7680
gtttccatgg cggtcggaac cgtgctgacc cgcaagtggc aacctccgt gcctctgctc	7740
acctttaccg cctggcaact ggcggccgga ggacttctgc tcgttccagt agcttttagt	7800
tttgcacac caatcccgat gcctacagga accaatgttc tcggcctggc gtggctcgcc	7860
ctgatcgag cgggttaac ctacttcctt tggttccggg ggatctcgac actcgaacct	7920
acagttgttt ctttactggg ctttctcagc cccagatctg gggtcgatca gcccgggatg	7980
catcaggccg acagtcggaa cttcggtcc ccgacctgtt ccattcggtg agcaatggat	8040
aggggagttt atatcgtaa cgttcacttc taaagaaata ggcgcactca gcttcctcag	8100
cggctttatc cagcgatttc ctattatgtc ggcatagttc tcaagatcga cagcctgtca	8160
cggtaagcg agaaatgaat aagaaggctg ataattcggta tctctgcgag ggagatgata	8220
tttgcacac ggcagcaacg ctctgtcattc gttacaatca acatgttacc ctccgcgaga	8280
tcatccgtgt ttcaaacccg gcagcttagt tgccgttctt ccgaatagca tcggtaacat	8340
gagcaaagtc tgccgcctta caacggctct cccgctgacg ccgtcccgga ctgatggct	8400
gcctgtatcg agtggtgatt ttgtgccgag ctgcccgtcg gggagctttt ggctggctgg	8460
tggcaggata tattgtggtg taaacaaatt gacgctttaga caacttaata acacattgcg	8520
gacgtttta atgtactggg gtgggttttc ttttaccatg tgagacggc aacagctgtat	8580
tgcccttcac cgcctggccc tgagagagtt gcagcaagcg gtccacgctg gtttgcggcc	8640

gcaggcgaaa atcctgttg atggtggttc cgaaatcgac aaaatccctt ataaatcaaa	8700
agaatagccc gagatagggt tgagtgttgc tccagttgg aacaagagtc cactattaaa	8760
gaacgtggac tccaacgtca aaggcgaaa aaccgtctat cagggcgatg gcccactacg	8820
tgaaccatca cccaaatcaa gtttttggg gtcgaggtgc cgtaaagcac taaatcgaa	8880
ccctaaaggg agcccccgat ttagagctt acggggaaag cggcgaaacg tggcgagaaa	8940
ggaagggaaag aaagcgaaag gagcgggcgc cattcaggct gcgcaactgt tgggaaggc	9000
gatcggtgcg ggcctttcg ctattacgc agctggcga agggggatgt gctgcaaggc	9060
gatataagttt ggttaacgcca ggttttccc agtcacgacg ttgtaaaacg acggccagtg	9120
aattaattcc catcttggaa gaaatatagt ttaaatattt attgataaaa taacaagtca	9180
ggtattatag tccaagcaaa aacataaatt tattgatgca agttaaatt cagaaatatt	9240
tcaataactg attatatcag ctggtagatt gccgttagatg aaagactgag tgcgatatta	9300
tgtgtataac ataaatttgat gatatagcta gcttagctca tcgggggatc cgtcgaagct	9360
agcttgggtc ccgctcagaa gaactcgatc agaaggcgat agaaggcgat gcgctgcgaa	9420
tcgggagcgg cgataccgta aagcacgagg aagcggtcag cccattcgcc gccaagctct	9480
tcagcaatat cacggtagc caacgctatg tcctgatagc ggtccgcccc acccagccgg	9540
ccacagtcga tgaatccaga aaagcggcca ttttccacca tgatattcgg caagcaggca	9600
tcgccccatggg tcacgacgag atcctcgccg tcgggcatgc ggccttgcg cctggcgaac	9660
agttcggctg gcgcgagccc ctgatgctct tcgtccagat catcctgatc gacaagaccg	9720
gcttccatcc gagtacgtgc tcgctcgatg cgatgttcg cttgggtggc gaatggcag	9780
gtagccggat caagcgatg cagccgccc attgcatcag ccatgatgga tactttctcg	9840
gcaggagcaa ggtgagatga caggagatcc tgccccggca cttcgcccaa tagcagccag	9900
tcccttcccg cttcagtgc aacgtcgagc acagctcgac aaggaacgcc cgtcggtggcc	9960
agccacgata gccgcgtgc ctgcgtcctgc agttcattca gggcaccgga caggtcggtc	10020
ttgacaaaaaa gaaccggcgccc cccctgcgtc gacagccgga acacggcgcc atcagagcag	10080
ccgattgtct gttgtgcccc gtcatagccg aatagcctct ccacccaaacg ggccggagaa	10140
cctgcgtgca atccatcttgc ttcaatccaa gctccatgg gcccctcgact agagtcgaga	10200
tctggattga gagtgaatat gagactctaa ttggataccg agggaaattt atggaacgtc	10260
agtggagcat ttttgcacaag aaatatttgc tagctgatag tgaccccttgc cgactttga	10320
acgcgcata atggtttctg acgtatgtgc ttagctcatt aaactccaga aaccggcgcc	10380

tgagtggctc cttcaacgtt gcggttctgt cagttccaaa cgtaaaacgg cttgtcccgc 10440
 gtcatcgccg ggggtcataa cgtgactccc ttaattctcc gctcatgatc ttgatcccct 10500
 gcgccatcag atccctggcg gcaagaaaagc catccagttt actttgcagg gcttcccaac 10560
 cttaccagag ggcgc(cc)ag ctggcaattc cggttcgctt gctgtccata aaaccgccc 10620
 gtctagctat cgccatgtaa gcccaactgca agctacactgc tttctctttg cgcttgcgtt 10680
 ttcccttgc cagatagccc agtagctgac attcatccgg ggtcagcacc gtttctgcgg 10740
 actggcttcc tacgtgttcc gcttccttta gcagcccttg cgccctgagt gcttgcggca 10800
 gcgtgaagct tgcatgcctg caggtcgacg gcgcgcgag ctcctcgagc aaatttacac 10860
 attgccacta aacgtctaaa cccttgtaat ttgttttgc tttactatgt gtgttatgta 10920
 ttgatttgc gataaatttt tatatttggt actaaattta taacacccctt tatgctaacg 10980
 ttgccaaca cttagcaatt tgcaagttga ttaattgatt ctaaatttatt tttgtcttct 11040
 aaatacatat actaatcaac tgaaaatgta aatatttgc aatatttcta ctataggaga 11100
 attaaagtga gtgaatatgg taccacaagg tttggagatt taattgtgc aatgctgcat 11160
 ggatggcata tacacccaaac attcaataat tcttgaggat aataatggta ccacacaaga 11220
 tttgaggtgc atgaacgtca cgtggacaaa aggttagta attttcaag acaacaatgt 11280
 taccacacac aagtttgag gtgcattgc ggtatccctg tggaaagttt aaaaatattt 11340
 tggaaatgat ttgcattggaa gccatgtgta aaaccatgac atccacttgg aggtgcaat 11400
 aatgaagaaa actacaaatt tacatgcaac tagttatgca tttttctat ataatgagga 11460
 ttttgcataa ctttcattca tacacactca ctaagttta cacgattata atttcttcat 11520
 agccagccca ccgcgggtggg cggccgcctg cagtctagaa ggcctctgc tttaatgaga 11580
 tatgcgagac gcctatgatc gcatgatatt tgcttcaat tctgttgc acgttgaaa 11640
 aaacctgagc atgttagt cagatccttta ccgcgggttt cggttcattc taatgaatat 11700
 atcacccgtt actatcgat ttttatgaaat aatattctcc gttcaattta ctgattgtcc 11760
 gtcgagcaaa ttacacatt gccactaaac gtctaaaccc ttgtatgg tttttgtttt 11820
 actatgtgtg ttatgtatgg gatttgcgat aaattttat atttggact aaatttataa 11880
 cacctttat gctaacgttt gccaacactt agcaatttgc aagttgatta attgattcta 11940
 aattttttt gtcttctaaa tacatataact aatcaactgg aatgtaaat atttgctaat 12000
 atttctacta taggagaatt aaagttagtg aatatggta cacaagggtt ggagattaa 12060

ttgttgcaat gctgcatgga tggcatatac accaaacatt caataattct tgaggataat 12120
 aatggtagcca cacaagattt gaggtgcatt aacgtcacgt ggacaaaagg ttttagtaatt 12180
 tttcaagaca acaatgttac cacacacaag ttttgaggtg catgcatttgc tgccctgtgg 12240
 aaagtttaaa aatattttgg aaatgatttg catggaagcc atgtgtaaaaa ccatgacatc 12300
 cacttggagg atgcaataat gaagaaaact acaaatttac atgcaactag ttatgcattt 12360
 agtctatata atgaggattt tgcaataactt tcattcatac acactcacta agttttacac 12420
 gattataatt tcttcatacg cagcggatcc gatatcggttcc cgctagcgt taaccctgct 12480
 ttaatgagat atgcgagacg cctatgatcg catgatattt gcttcaattt ctgttgca 12540
 cgttgtaaaaa aacctgagca tggtagctc agatccttac cgccggtttc ggttcattct 12600
 aatgaatata tcacccgtta ctatgttattt tttatgaata atattctccg ttcaatttac 12660
 tgattgtccg tcgagcaaat ttacacattt ccactaaacg tctaaaccct tgtaatttgc 12720
 tttgtttta ctatgtgtgt tatgtatttgc atttgcata aattttata tttggacta 12780
 aatttataac acctttatg ctaacgttttgc ccaacacttac gcaatttgc atgtgattaa 12840
 ttgattctaa attatttttgc tcttctaaat acatatactt atcaacttgc aatgtaaata 12900
 tttgctaata tttctactat aggagaatta aagttagtgc atatggtacc acaaggtttgc 12960
 gagatttaat tggcaatgc ctgcattttgc ggcataatac ccaacatttac aataattttt 13020
 gaggataata atggtaaccac acaagatttgc aggtgcatttgc acgtcacgttgc gacaaaagg 13080
 tttagtaattt ttcaagacaa caatgttacc acacacaagt tttgagggtgc atgcattttgc 13140
 gcccgttggaa aagtttaaaa atattttggaa aatgatttgc atggaagccat tggtaaaaac 13200
 catgacatcc acttggagga tgcaataatgc aagaaaacttac caaatttaca tgcaactatgt 13260
 tatgcatttgc tgcataatgc aatgttacc tttgagggttgc atgcattttgc 13320
 gttttacacg attataattt cttcatagcc agcagatcttgc ccggcatcga tccccggcc 13380
 tggcctgttgc ttatgagata tggtagacgc ctatgttgc atgatatttgc tttcaatttgc 13440
 tggtaaaaaa acctgagcat gtttagtgc gatcatttgc gcccgttgc 13500
 gttcatttgc atgaatataat caccggatc tatgttacc ttatgatataa tattttccgt 13560
 tcaatttact gattgtccgttgc acgttgcgg ttctgttgcgt tccaaacgttgc aacggcttgc 13620
 atcggcttgc tggctcatttgc aacgttgcgg ttctgttgcgt tccaaacgttgc aacggcttgc 13680
 tccccgttgc tggcgcccccc tccataacgttgc actcccttgc ttctccgttgc atgcattttgc 13740

tgtcgttcc cgcccttcagt ttaaactatc agtgttgac aggatatatt ggcggtaaa 13800
 cctaagagaa aagagcgaaa attagaataa tcggatattt aaaagggcgt gaaaaggttt 13860
 atccttcgtc catttgtatg tgcatgcca ccacagggtt cccca 13905

<210> 32
 <211> 1443
 <212> DNA
 <213> Phaeodactylum tricornutum

<220>
 <221> CDS
 <222> (9)..(1442)
 <223> delta-6-desaturase

<400> 32
 gatctaaa atg ggc aaa gga ggg gac gct cgg gcc tcg aag ggc tca acg 50
 Met Gly Lys Gly Gly Asp Ala Arg Ala Ser Lys Gly Ser Thr
 1 5 10

gcg gct cgc aag atc agt tgg cag gaa gtc aag acc cac gcg tct ccg 98
 Ala Ala Arg Lys Ile Ser Trp Gln Glu Val Lys Thr His Ala Ser Pro
 15 20 25 30

gag gac gcc tgg atc att cac tcc aat aag gtc tac gac gtg tcc aac 146
 Glu Asp Ala Trp Ile Ile His Ser Asn Lys Val Tyr Asp Val Ser Asn
 35 40 45

tgg cac gaa cat ccc gga ggc gcc gtc att ttc acg cac gcc ggt gac 194
 Trp His Glu His Pro Gly Gly Ala Val Ile Phe Thr His Ala Gly Asp
 50 55 60

gac atg acg gac att ttc gct gcc ttt cac gca ccc gga tcg cag tcg 242
 Asp Met Thr Asp Ile Phe Ala Ala Phe His Ala Pro Gly Ser Gln Ser
 65 70 75

ctc atg aag aag ttc tac att ggc gaa ttg ctc ccg gaa acc acc ggc 290
 Leu Met Lys Lys Phe Tyr Ile Gly Glu Leu Leu Pro Glu Thr Thr Gly
 80 85 90

aag gag ccg cag caa atc gcc ttt gaa aag ggc tac cgc gat ctg cgc 338
 Lys Glu Pro Gln Gln Ile Ala Phe Glu Lys Gly Tyr Arg Asp Leu Arg
 95 100 105 110

tcc aaa ctc atc atg atg ggc atg ttc aag tcc aac aag tgg ttc tac 386
 Ser Lys Leu Ile Met Met Gly Met Phe Lys Ser Asn Lys Trp Phe Tyr
 115 120 125

gtc tac aag tgc ctc ayc aac atg gcc att tgg gcc gcc gcc tgt gct 434
 Val Tyr Lys Cys Leu Ser Asn Met Ala Ile Trp Ala Ala Cys Ala
 130 135 140

ctc gtc ttt tac tcg gac cgc ttc tgg gta cac ctg gcc agc gcc gtc 482
 Leu Val Phe Tyr Ser Asp Arg Phe Trp Val His Leu Ala Ser Ala Val

145	150	155	
atg ctg gga aca ttc ttt cag cag tcg gga tgg ttg gca cac gac ttt Met Leu Gly Thr Phe Phe Gln Gln Ser Gly Trp Leu Ala His Asp Phe			530
160 165 170			
ctg cac cac cag gtc ttc acc aag cgc aag cac ggg gat ctc gga gga Leu His His Gln Val Phe Thr Lys Arg Lys His Gly Asp Leu Gly Gly			578
175 180 185 190			
ctc ttt tgg ggg aac ctc atg cag ggt tac tcc gta cag tgg tgg aaa Leu Phe Trp Gly Asn Leu Met Gln Gly Tyr Ser Val Gln Trp Trp Lys			626
195 200 205			
aac aag cac aac gga cac cac gcc gtc ccc aac ctc cac tgc tcc tcc Asn Lys His Asn Gly His His Ala Val Pro Asn Leu His Cys Ser Ser			674
210 215 220			
gca gtc gcg caa gat ggg gac ccg gac atc gat acc atg ccc ctt ctc Ala Val Ala Gln Asp Gly Asp Pro Asp Ile Asp Thr Met Pro Leu Leu			722
225 230 235			
gcc tgg tcc gtc cag caa gcc cag tct tac ccg gaa ctc caa gcc gac Ala Trp Ser Val Gln Gln Ala Gln Ser Tyr Arg Glu Leu Gln Ala Asp			770
240 245 250			
gga aag gat tcg ggt ttg gtc aag ttc atg atc cgt aac caa tcc tac Gly Lys Asp Ser Gly Leu Val Lys Phe Met Ile Arg Asn Gln Ser Tyr			818
255 260 265 270			
ttt tac ttt ccc atc ttg ttg ctc gcc cgc ctg tcg tgg ttg aac gag Phe Tyr Phe Pro Ile Leu Leu Ala Arg Leu Ser Trp Leu Asn Glu			866
275 280 285			
tcc ttc aag tgc gcc ttt ggg ctt gga gct gcg tcg gag aac gct gct Ser Phe Lys Cys Ala Phe Gly Leu Gly Ala Ala Ser Glu Asn Ala Ala			914
290 295 300			
ctc gaa ctc aag gcc aag ggt ctt cag tac ccc ctt ttg gaa aag gct Leu Glu Leu Lys Ala Lys Gly Leu Gln Tyr Pro Leu Leu Glu Lys Ala			962
305 310 315			
ggc atc ctg ctg cac tac gct tgg atg ctt aca gtt tcg tcc ggc ttt Gly Ile Leu Leu His Tyr Ala Trp Met Leu Thr Val Ser Ser Gly Phe			1010
320 325 330			
gga cgc ttc tcg ttc gcg tac acc gca ttt tac ttt cta acc gcg acc Gly Arg Phe Ser Phe Ala Tyr Thr Ala Phe Tyr Phe Leu Thr Ala Thr			1058
335 340 345 350			
gcg tcc tgt gga ttc ttg ctc gcc att gtc ttt ggc ctc ggc cac aac Ala Ser Cys Gly Phe Leu Leu Ala Ile Val Phe Gly Leu Gly His Asn			1106
355 360 365			
ggc atg gcc acc tac aat gcc gac gcc cgt ccg gac ttc tgg aag ctc Gly Met Ala Thr Tyr Asn Ala Asp Ala Arg Pro Asp Phe Trp Lys Leu			1154
370 375 380			

caa gtc acc acg act cgc aac gtc acg ggc gga cac ggt ttc ccc caa	385	390	395	1202
Gln Val Thr Thr Arg Asn Val Thr Gly Gly His Gly Phe Pro Gln				
gcc ttt gtc gac tgg ttc tgt ggt ggc ctc cag tac caa gtc gac cac	400	405	410	1250
Ala Phe Val Asp Trp Phe Cys Gly Gly Leu Gln Tyr Gln Val Asp His				
cac tta ttc ccc agc ctg ccc cga cac aat ctg gcc aag aca cac gca	415	420	425	1298
His Leu Phe Pro Ser Leu Pro Arg His Asn Leu Ala Lys Thr His Ala				
ctg gtc gaa tcg ttc tgc aag gag tgg ggt gtc cag tac cac gaa gcc	435	440	445	1346
Leu Val Glu Ser Phe Cys Lys Glu Trp Gly Val Gln Tyr His Glu Ala				
gac ctt gtg gac ggg acc atg gaa gtc ttg cac cat ttg ggc agc gtg	450	455	460	1394
Asp Leu Val Asp Gly Thr Met Glu Val Leu His His Leu Gly Ser Val				
gcc ggc gaa ttc gtc gtg gat ttt gta cgc gat gga ccc gcc atg taa a	465	470	475	1443
Ala Gly Glu Phe Val Val Asp Phe Val Arg Asp Gly Pro Ala Met				
<210> 33				
<211> 477				
<212> PRT				
<213> Phaeodactylum tricornutum				
<400> 33				
Met Gly Lys Gly Gly Asp Ala Arg Ala Ser Lys Gly Ser Thr Ala Ala	1	5	10	15
Arg Lys Ile Ser Trp Gln Glu Val Lys Thr His Ala Ser Pro Glu Asp	20	25	30	
Ala Trp Ile Ile His Ser Asn Lys Val Tyr Asp Val Ser Asn Trp His	35	40	45	
Glu His Pro Gly Gly Ala Val Ile Phe Thr His Ala Gly Asp Asp Met	50	55	60	
Thr Asp Ile Phe Ala Ala Phe His Ala Pro Gly Ser Gln Ser Leu Met	65	70	75	80
Lys Lys Phe Tyr Ile Gly Glu Leu Leu Pro Glu Thr Thr Gly Lys Glu	85	90	95	

Pro Gln Gln Ile Ala Phe Glu Lys Gly Tyr Arg Asp Leu Arg Ser Lys
 100 105 110

Leu Ile Met Met Gly Met Phe Lys Ser Asn Lys Trp Phe Tyr Val Tyr
 115 120 125

Lys Cys Leu Ser Asn Met Ala Ile Trp Ala Ala Ala Cys Ala Leu Val
 130 135 140

Phe Tyr Ser Asp Arg Phe Trp Val His Leu Ala Ser Ala Val Met Leu
 145 150 155 160

Gly Thr Phe Phe Gln Gln Ser Gly Trp Leu Ala His Asp Phe Leu His
 165 170 175

His Gln Val Phe Thr Lys Arg Lys His Gly Asp Leu Gly Gly Leu Phe
 180 185 190

Trp Gly Asn Leu Met Gln Gly Tyr Ser Val Gln Trp Trp Lys Asn Lys
 195 200 205

His Asn Gly His His Ala Val Pro Asn Leu His Cys Ser Ser Ala Val
 210 215 220

Ala Gln Asp Gly Asp Pro Asp Ile Asp Thr Met Pro Leu Leu Ala Trp
 225 230 235 240

Ser Val Gln Gln Ala Gln Ser Tyr Arg Glu Leu Gln Ala Asp Gly Lys
 245 250 255

Asp Ser Gly Leu Val Lys Phe Met Ile Arg Asn Gln Ser Tyr Phe Tyr
 260 265 270

Phe Pro Ile Leu Leu Ala Arg Leu Ser Trp Leu Asn Glu Ser Phe
 275 280 285

Lys Cys Ala Phe Gly Leu Gly Ala Ala Ser Glu Asn Ala Ala Leu Glu
 290 295 300

Leu Lys Ala Lys Gly Leu Gln Tyr Pro Leu Leu Glu Lys Ala Gly Ile
 305 310 315 320

Leu Leu His Tyr Ala Trp Met Leu Thr Val Ser Ser Gly Phe Gly Arg

325

330

335

Phe Ser Phe Ala Tyr Thr Ala Phe Tyr Phe Leu Thr Ala Thr Ala Ser
 340 345 350

Cys Gly Phe Leu Leu Ala Ile Val Phe Gly Leu Gly His Asn Gly Met
 355 360 365

Ala Thr Tyr Asn Ala Asp Ala Arg Pro Asp Phe Trp Lys Leu Gln Val
 370 375 380

Thr Thr Thr Arg Asn Val Thr Gly Gly His Gly Phe Pro Gln Ala Phe
 385 390 395 400

Val Asp Trp Phe Cys Gly Gly Leu Gln Tyr Gln Val Asp His His Leu
 405 410 415

Phe Pro Ser Leu Pro Arg His Asn Leu Ala Lys Thr His Ala Leu Val
 420 425 430

Glu Ser Phe Cys Lys Glu Trp Gly Val Gln Tyr His Glu Ala Asp Leu
 435 440 445

Val Asp Gly Thr Met Glu Val Leu His His Leu Gly Ser Val Ala Gly
 450 455 460

Glu Phe Val Val Asp Phe Val Arg Asp Gly Pro Ala Met
 465 470 475

<210> 34

<211> 17061

<212> DNA

<213> *Phaeodactylum tricornutum*, *Physcomitrella patens*, *Caenorhabditis elegans*

<220>

<221> CDS

<222> (4554)..(5987)

<223> *Phaeodactylum tricornutum* delta-6-desaturase

<220>

<221> CDS

<222> (2805)..(3653)

<223> *Caenorhabditis elegans* LPLAT

<220>

<221> CDS
 <222> (1026)..(1898)
 <223> Physcomitrella patens delta-6-elongase

<400> 34
 tggggAACCC tgggttggc atgcacatac aaatggacga aggataaaacc ttttacgccc 60
 ctttaaata tccgattatt ctaataaaacg ctctttctc ttaggtttac ccgccaataat 120
 atccgtcaa acactgatag tttaaactga aggcggaaa cgacaatctg atcatgagcg 180
 gagaattaag ggagtcaagt tatgacccccc gccgatgacg cgggacaagc cgtttacgt 240
 ttggaactga cagaaccgca acgttgaagg agccactcag ccgatctgaa ttcatcgatc 300
 ctctagaggc gcgcggagct cctcgagcaa atttacacat tgccactaaa cgtctaaacc 360
 ctgttaattt gttttgttt tactatgtgt gttatgtatt tgatttgcga taaattttta 420
 tatttggtagt taaattttata acacctttta tgctaacgtt tgccaaacact tagcaatttg 480
 caagttgatt aattgattct aaatttatttt tgtcttctaa atacatatac taatcaactg 540
 gaaatgtaaa tatttgcata tatttctact ataggagaat taaagtgagt gaatatggta 600
 ccacaagggtt tggagattta attgttgcaa tgctgcatgg atggcatata caccacacat 660
 tcaataattc ttgaggataa taatggtacc acacaagatt tgaggtgcat gaacgtcacg 720
 tggacaaaag gtttagtaat tttcaagac aacaatgtta ccacacacaa gttttgaggt 780
 gcatgcatgg atgcctgtg gaaagttaa aaatattttg gaaatgattt gcatgaaagc 840
 catgtgtaaa accatgacat ccacttggag gatgcaataa tgaagaaaac tacaaattta 900
 catgcaacta gttatgcatg tagtctatat aatgaggatt ttgcaataact ttcattcata 960
 cacactcact aagtttaca cgattataat ttcttcatacc ccagcccacc gcggtggcgc 1020
 gcccgc atg gag gtc gtg gag aga ttc tac ggt gag ttg gat ggg aag gtc 1070
 Met Glu Val Val Glu Arg Phe Tyr Gly Glu Leu Asp Gly Lys Val
 1 5 10 15
 tcg cag ggc gtg aat gca ttg ctg ggt agt ttt ggg gtg gag ttg acg 1118
 Ser Gln Gly Val Asn Ala Leu Leu Gly Ser Phe Gly Val Glu Leu Thr
 20 25 30
 gat acg ccc act acc aaa ggc ttg ccc ctc gtt gac agt ccc aca ccc 1166
 Asp Thr Pro Thr Thr Lys Gly Leu Pro Leu Val Asp Ser Pro Thr Pro
 35 40 45
 atc gtc ctc ggt gtt tct gta tac ttg act att gtc att gga ggg ctt 1214
 Ile Val Leu Gly Val Ser Val Tyr Leu Thr Ile Val Ile Gly Gly Leu
 50 55 60
 ttg tgg ata aag gcc agg gat ctg aaa ccg cgc gcc tcg gag cca ttt 1262

Leu Trp Ile Lys Ala Arg Asp Leu Lys Pro Arg Ala Ser Glu Pro Phe			
65	70	75	
ttg ctc caa gct ttg gtg ctt gtg cac aac ctg ttc tgt ttt gcg ctc			1310
Leu Leu Gln Ala Leu Val Leu Val His Asn Leu Phe Cys Phe Ala Leu			
80	85	90	95
agt ctg tat atg tgc gtg ggc atc gct tat cag gct att acc tgg cgg			1358
Ser Leu Tyr Met Cys Val Gly Ile Ala Tyr Gln Ala Ile Thr Trp Arg			
100	105	110	
tac tct ctc tgg ggc aat gca tac aat cct aaa cat aaa gag atg gcg			1406
Tyr Ser Leu Trp Gly Asn Ala Tyr Asn Pro Lys His Lys Glu Met Ala			
115	120	125	
att ctg gta tac ttg ttc tac atg tct aag tac gtg gaa ttc atg gat			1454
Ile Leu Val Tyr Leu Phe Tyr Met Ser Lys Tyr Val Glu Phe Met Asp			
130	135	140	
acc gtt atc atg ata ctg aag cgc agc acc agg caa ata agc ttc ctc			1502
Thr Val Ile Met Ile Leu Lys Arg Ser Thr Arg Gln Ile Ser Phe Leu			
145	150	155	
cac gtt tat cat cat tct tca att tcc ctc att tgg tgg gct att gct			1550
His Val Tyr His His Ser Ser Ile Ser Leu Ile Trp Trp Ala Ile Ala			
160	165	170	175
cat cac gct cct ggc ggt gaa gca tat tgg tct gcg gct ctg aac tca			1598
His His Ala Pro Gly Gly Glu Ala Tyr Trp Ser Ala Ala Leu Asn Ser			
180	185	190	
gga gtg cat gtt ctc atg tat gcg tat tac ttc ttg gct gcc tgc ctt			1646
Gly Val His Val Leu Met Tyr Ala Tyr Tyr Phe Leu Ala Ala Cys Leu			
195	200	205	
cga agt agc cca aag tta aaa aat aag tac ctt ttt tgg ggc agg tac			1694
Arg Ser Ser Pro Lys Leu Lys Asn Lys Tyr Leu Phe Trp Gly Arg Tyr			
210	215	220	
ttg aca caa ttc caa atg ttc cag ttt atg ctg aac tta gtg cag gct			1742
Leu Thr Gln Phe Gln Met Phe Gln Phe Met Leu Asn Leu Val Gln Ala			
225	230	235	
tac tac gac atg aaa acg aat gcg cca tat cca caa tgg ctg atc aag			1790
Tyr Tyr Asp Met Lys Thr Asn Ala Pro Tyr Pro Gln Trp Leu Ile Lys			
240	245	250	255
att ttg ttc tac tac atg atc tcg ttg ctg ttt ctt ttc ggc aat ttt			1838
Ile Leu Phe Tyr Tyr Met Ile Ser Leu Leu Phe Leu Phe Gly Asn Phe			
260	265	270	
tac gta caa aaa tac atc aaa ccc tct gac gga aag caa aag gga gct			1886
Tyr Val Gln Lys Tyr Ile Lys Pro Ser Asp Gly Lys Gln Lys Gly Ala			
275	280	285	
aaa act gag tga tctagaaggc ctcctgcttt aatgagatat gcgagacgcc			1938
Lys Thr Glu			

290

tatgatcgca tgatatttgc tttcaattct gttgtgcacg ttgtaaaaaaaaa cctgagcatg	1998
tgtagctcag atccttaccg ccggtttcgg ttcattctaa tgaatataatc acccgttact	2058
atcgtatTT tatgaataat attctccgtt caatttactg attgtccgtc gagcaaattt	2118
acacattgcc actaaacgtc taaacccttg taatttgttt ttgtttact atgtgtgtta	2178
tgtatTTgat ttgcgataaa ttttatatt tggtactaaa ttataacac ctTTtatgct	2238
aacgTTTgcc aacacttagc aatttgcag ttgattaatt gattctaaat tattttgtc	2298
ttctaaatac atataactaat caactggaaa tgtaaatatt tgctaatatt tctactatag	2358
gagaattaaa gtgagtgaat atggtaacc aaggTTTgga gatttaattt ttgcaatgct	2418
gcattggatgg catatacacc aaacattcaa taattttga ggataataat ggtaccacac	2478
aagatttgag gtgcatgaac gtcacgtgga caaaaggTTt agtaattttt caagacaaca	2538
atgttaccac acacaagttt tgaggtgcat gcatggatgc cctgtggaaa gttaaaaat	2598
atTTTggaaa tgatttgcattt ggaagccatg tgtaaaacca tgacatccac ttggaggatg	2658
caataatgaa gaaaactaca aatttacatg caactagttt tgcatgttagt ctatataatg	2718
aggattttgc aataactttca ttcatacaca ctcactaagt ttacacgtatataatttct	2778
tcatagccag cggatccgccc cacata atg gag aac ttc tgg tct att gtt gtg	2831
Met Glu Asn Phe Trp Ser Ile Val Val	
295	
ttt ttt cta ctc tca att ctc ttc att tta tat aac ata tcg aca gta	2879
Phe Phe Leu Leu Ser Ile Leu Phe Ile Leu Tyr Asn Ile Ser Thr Val	
300 305 310 315	
tgc cac tac tat atg cgg att tcg ttt tat tac ttc aca att tta ttg	2927
Cys His Tyr Tyr Met Arg Ile Ser Phe Tyr Tyr Phe Thr Ile Leu Leu	
320 325 330	
cat gga atg gaa gtt tgt aca atg atc cct tct tgg cta aat ggg	2975
His Gly Met Glu Val Cys Val Thr Met Ile Pro Ser Trp Leu Asn Gly	
335 340 345	
aag ggt gct gat tac gtg ttt cac tcg ttt ttc tat tgg tgt aaa tgg	3023
Lys Gly Ala Asp Tyr Val Phe His Ser Phe Phe Tyr Trp Cys Lys Trp	
350 355 360	
act ggt gtt cat aca aca gtc tat gga tat gaa aaa aca caa gtt gaa	3071
Thr Gly Val His Thr Val Tyr Gly Tyr Glu Lys Thr Gln Val Glu	
365 370 375	
ggt ccg gct gta gtt att tgt aat cat cag agt tct ctc gac att cta	3119
Gly Pro Ala Val Val Ile Cys Asn His Gln Ser Ser Leu Asp Ile Leu	
380 385 390 395	

tcg atg gca tca atc tgg ccg aag aat tgt gtt gta atg atg aaa cga Ser Met Ala Ser Ile Trp Pro Lys Asn Cys Val Val Met Met Lys Arg 400 405 410	3167
att ctt gcc tat gtt cca ttc ttc aat ctc gga gcc tac ttt tcc aac Ile Leu Ala Tyr Val Pro Phe Phe Asn Leu Gly Ala Tyr Phe Ser Asn 415 420 425	3215
aca atc ttc atc gat cga tat aac cgt gaa cgt gcg atg gct tca gtt Thr Ile Phe Ile Asp Arg Tyr Asn Arg Glu Arg Ala Met Ala Ser Val 430 435 440	3263
gat tat tgt gca tct gaa atg aag aac aga aat ctt aaa ctt tgg gta Asp Tyr Cys Ala Ser Glu Met Lys Asn Arg Asn Leu Lys Leu Trp Val 445 450 455	3311
ttt ccg gaa gga aca aga aat cgt gaa gga ggg ttc att cca ttc aag Phe Pro Glu Gly Thr Arg Asn Arg Glu Gly Gly Phe Ile Pro Phe Lys 460 465 470 475	3359
aaa gga gca ttc aat att gca gtt cgt gcg cag att ccc att att cca Lys Gly Ala Phe Asn Ile Ala Val Arg Ala Gln Ile Pro Ile Ile Pro 480 485 490	3407
gtt gta ttc tca gac tat cgg gat ttc tac tca aag cca ggc cga tat Val Val Phe Ser Asp Tyr Arg Asp Phe Tyr Ser Lys Pro Gly Arg Tyr 495 500 505	3455
ttc aag aat gat gga gaa gtt gtt att cga gtt ctg gat gcg att cca Phe Lys Asn Asp Gly Glu Val Val Ile Arg Val Leu Asp Ala Ile Pro 510 515 520	3503
aca aaa ggg ctc act ctt gat gac gtc agc gag ttg tct gat atg tgt Thr Lys Gly Leu Thr Leu Asp Asp Val Ser Glu Leu Ser Asp Met Cys 525 530 535	3551
cg ^g gac gtt atg ttg gca gcc tat aag gaa gtt act cta gaa gct cag Arg Asp Val Met Leu Ala Ala Tyr Lys Glu Val Thr Leu Glu Ala Gln 540 545 550 555	3599
caa cga aat gcg aca cgg cgt gga gaa aca aaa gac ggg aag aaa tct Gln Arg Asn Ala Thr Arg Arg Gly Glu Thr Lys Asp Gly Lys Lys Ser 560 565 570	3647
gag taa gctagcgtta accctgcttt aatgagat ^{at} gcgagacgcc tatgatcgca Glu	3703
tgatattgc tttcaattct gttgtgcacg ttgtaaaaaa cctgagcatg ttagctcag	3763
atccttacgg ccggtttcgg ttcaattctaa tgaatatac acccgttact atcgatattt	3823
tatgaataat attctccgtt caat ^{tt} actg attgtccgtc gagcaaattt acacattgcc	3883
actaaacgtc taaacccttg taat ^{tt} gttta ttgtttact atgtgtgtta tgtat ^{tt} gat	3943

ttgcgataaa tttttatatt tggtactaaa ttataaacac ctttatgct aacgttgcc	4003
aacacttagc aatttgcaag ttgattaatt gattctaaat tattttgtc ttctaaatac	4063
ataactaat caactggaaa tgtaaatatt tgctaatatt tctactatacgagaattaaa	4123
gtgagtgaat atggtaaccac aagggttggaa gatttaattt tgcaatgct gcatggatgg	4183
catatacacc aaacattcaa taattcttga ggataataat ggtaccacac aagatttgag	4243
gtgcatgaac gtcacgtgga caaaaggttt agtaattttt caagacaaca atgttaccac	4303
acacaagttt tgaggtgcat gcatggatgc cctgtggaaa gtttaaaaat atttggaaa	4363
tgatttgcat ggaagccatg tgtaaaaacca tgacatccac ttggaggatg caataatgaa	4423
gaaaactaca aatttacatg caactagttt tgcatgttgt ctatataatg aggattttgc	4483
aatacttca ttcatacaca ctcactaagt tttacacgt tataatttct tcatagccag	4543
cagatctaaa atg ggc aaa gga ggg gac gct cgg gcc tcg aag ggc tca	4592
Met Gly Lys Gly Asp Ala Arg Ala Ser Lys Gly Ser	
575 580 585	
acg gcg gct cgc aag atc agt tgg cag gaa gtc aag acc cac gcg tct	4640
Thr Ala Ala Arg Lys Ile Ser Trp Gln Glu Val Lys Thr His Ala Ser	
590 595 600	
ccg gag gac gcc tgg atc att cac tcc aat aag gtc tac gac gtg tcc	4688
Pro Glu Asp Ala Trp Ile Ile His Ser Asn Lys Val Tyr Asp Val Ser	
605 610 615	
aac tgg cac gaa cat ccc gga ggc gcc gtc att ttc acg cac gcc ggt	4736
Asn Trp His Glu His Pro Gly Gly Ala Val Ile Phe Thr His Ala Gly	
620 625 630	
gac gac atg acg gac att ttc gct gcc ttt cac gca ccc gga tcg cag	4784
Asp Asp Met Thr Asp Ile Phe Ala Ala Phe His Ala Pro Gly Ser Gln	
635 640 645	
tcg ctc atg aag aag ttc tac att ggc gaa ttg ctc ccg gaa acc acc	4832
Ser Leu Met Lys Lys Phe Tyr Ile Gly Glu Leu Leu Pro Glu Thr Thr	
650 655 660 665	
ggc aag gag ccg cag caa atc gcc ttt gaa aag ggc tac cgc gat ctg	4880
Gly Lys Glu Pro Gln Gln Ile Ala Phe Glu Lys Gly Tyr Arg Asp Leu	
670 675 680	
cgc tcc aaa ctc atc atg atg ggc atg ttc aag tcc aac aag tgg ttc	4928
Arg Ser Lys Leu Ile Met Met Gly Met Phe Lys Ser Asn Lys Trp Phe	
685 690 695	
tac gtc tac aag tgc ctc agc aac atg gcc att tgg gcc gcc ggc tgc	4976
Tyr Val Tyr Lys Cys Leu Ser Asn Met Ala Ile Trp Ala Ala Ala Cys	
700 705 710	
gct ctc gtc ttt tac tcg gac cgc ttc tgg gta cac ctg gcc agc gcc	5024

Ala Leu Val Phe Tyr Ser Asp Arg Phe Trp Val His Leu Ala Ser Ala
 715 720 725

gtc atg ctg gga aca ttc ttt cag cag tcg gga tgg ttg gca cac gac 5072
 Val Met Leu Gly Thr Phe Phe Gln Gln Ser Gly Trp Leu Ala His Asp
 730 735 740 745

ttt ctg cac cac cag gtc ttc acc aag cgc aag cac ggg gat ctc gga 5120
 Phe Leu His His Gln Val Phe Thr Lys Arg Lys His Gly Asp Leu Gly
 750 755 760

gga ctc ttt tgg ggg aac ctc atg cag ggt tac tcc gta cag tgg tgg 5168
 Gly Leu Phe Trp Gly Asn Leu Met Gln Gly Tyr Ser Val Gln Trp Trp
 765 770 775

aaa aac aag cac aac gga cac cac gcc gtc ccc aac ctc cac tgc tcc 5216
 Lys Asn Lys His Asn Gly His His Ala Val Pro Asn Leu His Cys Ser
 780 785 790

tcc gca gtc gcg caa gat ggg gac ccg gac atc gat acc atg ccc ctt 5264
 Ser Ala Val Ala Gln Asp Gly Asp Pro Asp Ile Asp Thr Met Pro Leu
 795 800 805

ctc gcc tgg tcc gtc cag caa gcc cag tct tac ccg gaa ctc caa gcc 5312
 Leu Ala Trp Ser Val Gln Gln Ala Gln Ser Tyr Arg Glu Leu Gln Ala
 810 815 820 825

gac gga aag gat tcg ggt ttg gtc aag ttc atg atc cgt aac caa tcc 5360
 Asp Gly Lys Asp Ser Gly Leu Val Lys Phe Met Ile Arg Asn Gln Ser
 830 835 840

tac ttt tac ttt ccc atc ttg ttg ctc gcc cgc ctg tcg tgg ttg aac 5408
 Tyr Phe Tyr Phe Pro Ile Leu Leu Leu Ala Arg Leu Ser Trp Leu Asn
 845 850 855

gag tcc ttc aag tgc gcc ttt ggg ctt gga gct gcg tcg gag aac gct 5456
 Glu Ser Phe Lys Cys Ala Phe Gly Leu Gly Ala Ala Ser Glu Asn Ala
 860 865 870

gct ctc gaa ctc aag gcc aag ggt ctt cag tac ccc ctt ttg gaa aag 5504
 Ala Leu Glu Leu Lys Ala Lys Gly Leu Gln Tyr Pro Leu Leu Glu Lys
 875 880 885

gct ggc atc ctg ctg cac tac gct tgg atg ctt aca gtt tcg tcc ggc 5552
 Ala Gly Ile Leu Leu His Tyr Ala Trp Met Leu Thr Val Ser Ser Gly
 890 895 900 905

ttt gga cgc ttc tcg ttc gcg tac acc gca ttt tac ttt cta acc gcg 5600
 Phe Gly Arg Phe Ser Phe Ala Tyr Thr Ala Phe Tyr Phe Leu Thr Ala
 910 915 920

acc gcg tcc tgt gga ttc ttg ctc gcc att gtc ttt ggc ctc ggc cac 5648
 Thr Ala Ser Cys Gly Phe Leu Leu Ala Ile Val Phe Gly Leu Gly His
 925 930 935

aac ggc atg gcc acc tac aat gcc gac gcc cgt ccg gac ttc tgg aag 5696
 Asn Gly Met Ala Thr Tyr Asn Ala Asp Ala Arg Pro Asp Phe Trp Lys

940	945	950	
ctc caa gtc acc acg act cgc aac gtc acg ggc gga cac ggt ttc ccc			5744
Leu Gln Val Thr Thr Thr Arg Asn Val Thr Gly Gly His Gly Phe Pro			
955	960	965	
caa gcc ttt gtc gac tgg ttc tgt ggt ggc ctc cag tac caa gtc gac			5792
Gln Ala Phe Val Asp Trp Phe Cys Gly Leu Gln Tyr Gln Val Asp			
970	975	980	985
cac cac tta ttc ccc agc ctg ccc cga cac aat ctg gcc aag aca cac			5840
His His Leu Phe Pro Ser Leu Pro Arg His Asn Leu Ala Lys Thr His			
990	995	1000	
gca ctg gtc gaa tcg ttc tgc aag gag tgg ggt gtc cag tac cac			5885
Ala Leu Val Glu Ser Phe Cys Lys Glu Trp Gly Val Gln Tyr His			
1005	1010	1015	
gaa gcc gac ctt gtg gac ggg acc atg gaa gtc ttg cac cat ttg			5930
Glu Ala Asp Leu Val Asp Gly Thr Met Glu Val Leu His His Leu			
1020	1025	1030	
ggc agc gtg gcc ggc gaa ttc gtc gtg gat ttt gta cgc gat gga			5975
Gly Ser Val Ala Gly Glu Phe Val Val Asp Phe Val Arg Asp Gly			
1035	1040	1045	
ccc gcc atg taa agatctgccg gcatcgatcc cgggccccatgg cctgctttaa			6027
Pro Ala Met			
tgagatatgc gagacgccta tgatcgcatg atatttgctt tcaattctgt tggcacgtt			6087
gtaaaaaaaaacc tgagcatgtg tagctcagat ccttaccgc ggtttcggtt cattctaatg			6147
aatatatac ccttactat cgtatttta tgaataataat tctccgttca atttactgat			6207
tgtccgtcga cgagctcggc gcgccgtcga cctgcaggca tgcaagcttc acgctgccgc			6267
aagcactcag ggcgcaaggg ctgctaaagg aagcggaaaca cgtagaaagc cagtcgcag			6327
aaacggtgct gaccccgat gaatgtcagc tactggctt tctggacaag gaaaaacgca			6387
agcgcaaaga gaaagcaggt agcttgcagt gggcttacat ggcgatagct agactggcgc			6447
gttttatgga cagcaagcga accggaattt ccagctgggg cgcctctgg taaggttggg			6507
aagccctgca aagtaaactg gatggcttcc ttgccgc当地 ggatctgatg ggcgaggaa			6567
tcaagatcat gagcggagaa ttaagggagt cacgttatga ccccccgc当地 tgacgcggaa			6627
caagccgttt tacgttgga actgacagaaa ccgcaacgtt gaaggagcca ctcagccgc当地			6687
ggtttctgga gtttaatgag ctaagcacat acgtcagaaa ccattattgc ggcgttcaaaa			6747
gtcgcctaag gtcactatca gctagcaaattt atttcttgc当地 aaaaatgctc cactgacgtt			6807
ccataaattt ccctcggtat ccaatttagag tctcatattt actctcaatc cagatctcga			6867

ctctagtcga gggcccatgg gagcttggat tgaacaagat ggattgcacg cagttctcc	6927
ggccgcttgg gtggagaggc tattcggcta tgactggca caacagacaa tcggctgctc	6987
tgatgccgcc gtgtccggc tgtcagcgca ggggcggccg gttcttttg tcaagaccga	7047
cctgtccggc gcccgtaatg aactgcagga cgaggcagcg cggctatcgt ggctggccac	7107
gacgggcgtt cttgcgcag ctgtgctcga cggtgtcaact gaagcgggaa gggactggct	7167
gctattggc gaagtgcgg ggcaggatct cctgtcatct caccttgctc ctgcccggaa	7227
agtatccatc atggctgatc caatgcggcg gctgcatacg cttgatccgg ctacactgccc	7287
attcgaccac caagcgaac atcgcatcga gcgagcacgt actcggatgg aagccggct	7347
tgtcgatcag gatgatctgg acgaagagca tcaggggctc ggcgcagccg aactgttcgc	7407
caggctcaag ggcgcgcatgc ccgacggcgaa ggatctcgctc gtgaccctatg ggcgcgcctg	7467
cttgcgaat atcatggtgg aaaaatggccg ctttctgga ttcatcgact gtggccggct	7527
gggtgtggcg gaccgctatc aggacatagc gttggctacc cgtgatattg ctgaagagct	7587
tggcggcgaa tgggctgacc gcttcctcgat gctttacggt atcgccgctc ccgattcgca	7647
gcgcatcgcc ttctatcgcc ttcttgacga gttctctga gcgggaccctt agctagcttc	7707
gacggatccc ccgatgagct aagctagcta tatcatcaat ttatgttata cacataat	7767
cgcaactcgat ctttcatcta cgcaatgtt ccagctgata taatcagtta ttgaaatatt	7827
tctgaattta aacttgcattc aataaaattta tgttttgct tggactataa tacctgactt	7887
gttattttat caataaaatata ttaaaactata tttcttcaa gatggaaatt aattcactgg	7947
ccgtcgcccc acaacgtcgat gactggggaa accctggcgat tacccttaccc aatcgccctt	8007
cagcacatcc cccttcgccc agctggcgta atagcgaaga ggcggcacc gatgcgcctt	8067
cccaacagtt ggcgcgcctg aatggcgccc gtccttcgat ctttcttccc ttcccttc	8127
gccacgttcg ccggcttcc ccgtcaagct ctaaatcggtt ggctccctt agggttccga	8187
tttagtgctt tacggcacct cgaccccaaa aaacttgatt tgggtgatgg ttcacgttagt	8247
ggccatcgcc cctgatagac ggttttcgat ctttgcgtt tggagtccac gttctttaat	8307
agtggactct tggccaaac tggaaacaaca ctcaacccta tctcggcgat ttctttgat	8367
ttataaggga ttttgcgat ttcggaaacca ccatcaaaca ggatttcgat ctgctggggc	8427
aaaccagcgt ggaccgcctt ctgcaactct ctcaggccat ggcgggtgaag ggcaatcagc	8487
tgttgcccgat ctcactggat aaaaagaaaaaa ccacccagttt acattaaaaaa cgtccgcataat	8547

gtgttattaa gttgtctaag cgtcaatttg tttacaccac aatatatcct gccaccagcc 8607
agccaacagc tccccgaccg gcagctcgcc acaaaatcac cactcgatac aggcagccca 8667
tcagtcggg acggcgtagc cgggagagcc gttgttaaggc ggcagacttt gctcatgtta 8727
ccgatgctat tcggaagaac ggcaactaag ctgcccgggtt taaaacacgg atgatctcg 8787
ggagggttagc atgttgattt taacgatgac agagcggtgc tgcctgtat caaatatcat 8847
ctccctcgca gagatccgaa ttatcagcct tcttattcat ttctcgctt accgtgacag 8907
gctgtcgatc ttgagaacta tgccgacata ataggaaatc gctggataaa gccgctgagg 8967
aagctgagtg gcgcattttc tttagaagtg aacgttgacg atatcaactc ccctatccat 9027
tgctcaccga atggtaacagg tcggggaccc gaagttccga ctgtcgccct gatgcattccc 9087
cggtcgatcg accccagatc tggggctgag aaagcccagt aaggaaacaa ctgtaggttc 9147
gagtcgcgag atcccccgga accaaaggaa gtaggttaaa cccgctccga tcaggccgag 9207
ccacgcccagg ccgagaacat tggttcctgt aggcattcggg attggcggat caaacactaa 9267
agctactgga acgagcagaa gtcctccggc cgccagttgc caggcggtaa aggtgagcag 9327
aggcacggga gtttgcact tgcgggtcag cacgggtccg aacgccatgg aaaccgcccc 9387
cgccaggccc gtcgcacgc cgacaggatc tagcgctcg tttgtgtca acaccaacag 9447
cgccacgccc gcagttccgc aaatagcccc caggaccgcc atcaatcgta tcgggctacc 9507
tagcagagcg gcagagatga acacgaccat cagcggctgc acagcgctta ccgtcgccgc 9567
gaccccccggg ggcaggcggt agaccgaaat aaacaacaag ctccagaata gcgaaatatt 9627
aagtgcggcg agatgaaga tgcgcattca ccagattccc gttgaatct gtcggacgat 9687
catcacgagc aataaaccgg cggcaacgc ccgcagcagc ataccggcga cccctcgcc 9747
tcgctttcg ggctccacga aaacggcggc cagatgcgcc ttgtgagcgt cttggggcc 9807
gtcctcctgt ttgaagacccg acagccaat gatctcgccg tcgatgttagg cgccgaatgc 9867
cacggcatct cgcaaccgtt cagcgaacgc ctccatgggc ttttctcct cgtgctcgta 9927
aacggaccccg aacatctctg gagcttctt cagggccgac aatcgatct cgccgaaatc 9987
ctgcacgtcg gcccgtccaa gcccgtcaat ctgagcctta atcacaatttgc tcaattttaa 10047
tcctctgttt atcggcagtt cgtagagcgc gcccgtcgcc cccgacgata ctgagcgaag 10107
caagtgcgtc gagcagtgcc cgcgttgc taaaatgcca gtaaagcgct ggctgctgaa 10167
cccccagcccg gaactgaccc cacaaggccc tagcgttgc aatgcaccag gtcatcatttgc 10227
accaggcggt gttccaccag gcccgtcgcc cgcactctt cgcaggcttc gcccgtcc 10287

tcgcgccact tcttcacgcg ggtggaatcc gatccgcaca tgaggcggaa ggtttccagc 10347
 ttgagcgggt acggctcccg gtgcgagctg aaatagtcga acatccgtcg ggccgtcggc 10407
 gacagcttgc ggtacttctc ccatatgaat ttcgtgtagt ggtcgccagc aaacagcacg 10467
 acgatttcct cgtcgatcag gacctggcaa cgggacgttt tcttgccacg gtccaggacg 10527
 cggaagcggt gcagcagcga caccgattcc aggtgcccaa cgccgtcggc cgtgaagccc 10587
 atcgccgtcg cctgttaggctg cgacaggcat tcctcggct tcgtgtataa ccggccattg 10647
 atcgaccagc ccaggtcctg gcaaagctcg tagaacgtga aggtgatcgg ctgcggata 10707
 ggggtgcgct tcgcgtactc caacacctgc tgccacacca gttcgatcgtc gtcggcccgc 10767
 agctcgacgc cggtaggt gatcttcacg tccttggta cgtggaaaat gacttgttt 10827
 tgcaagcgctt cgcgcggat ttcttggta cgcgtggta acagggcaga gcgggcccgtg 10887
 tcgttggca tcgctcgcat cgtgtccggc cacggcgcaa tatcgaacaa ggaaagctgc 10947
 atttccttga tctgctgctt cgtgtgtttc agcaacgcgg cctgcttggc ctgcgtgacc 11007
 tggtttgcca ggtcctcgcc ggcggttttt cgcttcttgg tcgtcatagt tcctcggtg 11067
 tcgatggtca tcgacttcgc caaacctgcc gcctcctgtt cgagacgacg cgaacgctcc 11127
 acggcggccg atggcgcggg cagggcaggg ggagccagtt gcacgctgtc ggcgtcgatc 11187
 ttggccgttag cttgctggac catcgagccg acggactgga aggtttcgcc gggcgacgc 11247
 atgacggtgc ggcttgcgtat ggtttcgca tcctcggccgg aaaaccccgc gtcgtatcgt 11307
 tcttgcctgt atgccttccg gtcaaacgtc cgattcattc accctccttg cgggattgcc 11367
 ccgactcacg ccggggcaat gtgcccttat tcctgatttg acccgcttgg tgccttggta 11427
 tccagataat ccaccttatac ggcaatgaag tcggtccgt agaccgtctg gccgtccttc 11487
 tcgtacttgg tattccgaat ctgcccgtc acgaatacca gcgacccctt gccaaatac 11547
 ttgccgtggg cctcggcctg agagccaaaa cacttgatgc ggaagaagtc ggtgcgtcc 11607
 tgottgtcgc cggcatcgat ggcgcacatc taggtactaa aacaattcat ccagtaaaat 11667
 ataataatttt attttctccc aatcaggctt gatccccagt aagtcaaaaa atagctcgac 11727
 atactgttct tccccgatatac cctccctgtat cgacggacg cagaaggcaa tgtcatacca 11787
 cttgtccggcc ctgcccgttc tcccaagatc aataaagcca cttactttgc catcttcac 11847
 aaagatgttg ctgtctccca ggtcgccgtg ggaaaagaca agttccttgc cgggttttc 11907
 cgtctttaaa aaatcataca gctcgccgg atctttaaat ggagtgttgc cttccagtt 11967

ttgcgaatcc acatcgcca gatcgttatt cagtaagtaa tccaattcg ctaagcggt 12027
 gtctaaagcta ttctgtatagg gacaatccga tatgtcgatg gagtgaaaga gcctgatgca 12087
 ctccgcatac agctcgataa tctttcagg gctttgtca tcttcatact ctcccgagca 12147
 aaggacgcca tcggccac tcgtggcagcattgctccag ccatcatgcc gttcaaagtg 12207
 caggaccttt ggaacaggca gctttccttc cagccatagc atcatgtcct tttcccggtc 12267
 cacatcatag gtggtcctt tataccggct gtccgtcatt tttaaatata ggtttcatt 12327
 ttctcccacc agcttatata ccttagcagg agacattcct tccgtatcct ttacgcagcg 12387
 gtatTTTcg atcagTTTT tcaattccgg tgatattctc atttttagcca tttattattt 12447
 ctttccttt ttctacagta tttaaagata cccaaagaag ctaattataa caagacgaac 12507
 tccaattcac tgttccctgc attctaaaac cttaaatacc agaaaacagc ttttcaaag 12567
 ttgtttcaa agttggcgta taacatagta tcgacggagc cgattttgaa accacaatta 12627
 tgggtgatgc tgccaactta ctgatttagt gtatgatggt gttttgagg tgctccagtg 12687
 gcttcgtgt ctatcagctg tccctctgt tcagctactg acgggggtggt gcgttaacggc 12747
 aaaagcaccg ccggacatca gcgctatctc tgctctcaact gccgtaaaac atggcaactg 12807
 cagttcaattt acaccgcttc tcaacccggta acgcaccaga aaatcattga tatggccatg 12867
 aatggcggtt gatgccccggc aacagccccgc attatggcg ttggcctcaa cacgatttt 12927
 cgtcacttaa aaaactcagg ccgcagtcgg taacctcgcg catacagccg ggcagtgacg 12987
 tcatcgctgt cgccggaaatg gacgaacagt ggggttatgt cggggctaaa tcgccccagc 13047
 gctggctgtt ttacgcgtat gacagtctcc ggaagacggt tggtgcgcac gtattcggt 13107
 aacgcactat ggccgacgctg gggcgtctta tgagcctgct gtcacccttt gacgtggta 13167
 tatggatgac ggtatggctgg ccgctgtatg aatcccgctt gaaggaaag ctgcacgtaa 13227
 tcagcaagcg atatacgcag cgaattgagc ggcataacct gaatctgagg cagcacctgg 13287
 cacggctggg acggaagtcg ctgtcggttct caaaatcggt ggagctgcat gacaaagtca 13347
 tcgggcatta tctgaacata aaacactatc aataagttgg agtcattacc caattatgtat 13407
 agaatttaca agctataagg ttattgtcctt gggttcaag cattagtcca tgcaagtttt 13467
 tatgcttgc ccattctata gatatattga taagcgcgct gcctatgcct tgccccctga 13527
 aatccttaca tacggcgata tcttctataat aaaagatata ttatcttatac agtattgtca 13587
 atatattcaa ggcaatctgc ctccatcc tcttcattcctt ctgcgtctg gtagttttt 13647
 aaatatggcg cttcatagag taattctgta aagggtccaaat tctcggtttc ataccccggt 13707

ataatcttac ctatcacctc aaatggttcg ctgggttat cgcacccccc aacacgagca 13767
cggcacccgc gaccactatg ccaagaatgc ccaaggtaaa aattgccggc cccgccatga 13827
agtccgtgaa tgccccgacg gccgaagtga agggcaggcc gccacccagg cgcgcgcct 13887
caactgcccgg cacctggtcg ctgaatgtcg atgccagcac ctgcggcacg tcaatgcttc 13947
cgggcgtcgc gctcgggctg atcgcccatc ccgttactgc cccgatcccg gcaatggcaa 14007
ggactgccag cgctgccatt ttgggggtga ggccgttcgc ggccgagggg cgcagccct 14067
ggggggatgg gaggcccgcg tttagcgggccc gggaggggttc gagaaggggg ggcacccccc 14127
ttcggcgtgc gcggtcacgc gcacagggcg cagccctggt taaaaacaag gtttataaat 14187
attggttaa aagcaggtta aaagacaggt tagcggtggc cgaaaaacgg gcggaaaccc 14247
ttgcaaatgc tggattttct gcctgtggac agcccctcaa atgtcaataag gtgcgcgcct 14307
catctgtcag cactctgccc ctcaagtgtc aaggatcgcg cccctcatct gtcagtagtc 14367
gcgcgcctca agtgtcaata ccgcagggca cttatccccaa ggcttgcata catcatctgt 14427
gggaaaactcg cgtaaaatca ggcttgcgc ccgatttgcg aggctggcca gtcacacgtc 14487
gccggccgaa atcgaggctg cccctcatct gtcaacgccc cgccgggtga gtcggccct 14547
caagtgtcaa cgtccgccttccatctgtca gtgaggggca agtttccgc gaggtatcca 14607
caacgcggc ggccgcggtg tctcgacac ggcttcgacg gcgttctgg cgctttgca 14667
gggcctataga cggccgcctcg cccagcggcg agggcaacca gcccgggtgag cgtcgaaag 14727
gcgcgtcggtc ttgccttgct cgtcggtgat gtacttcacc agctccgcga agtcgtctt 14787
cttgatggag cgcatggggc cgtgcttggc aatcacgcgc acccccccggc cgttttagcg 14847
gctaaaaaaag tcatggctct gccctcgggc ggaccacgcc catcatgacc ttgccaagct 14907
cgtcctgctt ctcttcgatc ttgcggcagca gggcgaggat cgtggcatca ccgaaccgcg 14967
ccgtgcgcgg gtcgtcggtg agccagagtt tcagcaggcc gcccaggcgg cccaggtcgc 15027
cattgatgcg ggccagctcg cggacgtgct catatccac gacgcccgtg atttttagc 15087
cctggccgac ggccagcagg taggcccaca ggctcatgcc ggccgcccgc gcctttccct 15147
caatcgctct tcgttgcgtct ggaaggcagt acacccgtat aggtgggtcg cccttcgtt 15207
ttggcttgggt ttcatcagcc atccgcgttgc cctcatctgt tacgcccggcg gtagccggcc 15267
agcctcgcaag agcaggattc ccgttgcgc cccgcagggtg cgaataaggg acagtgaaga 15327
aggaacaccc gtcgcgggt gggcctactt cacctatcct gcccggctga cgccgttgaa 15387

tacaccaagg aaagtctaca cgaaccctt ggcaaaatcc tgtatatcgt gcgaaaaagg 15447
 atggatatac cgaaaaaaatc gctataatga ccccgaagca gggttatgca gcggaaaagc 15507
 gccacgcttc ccgaaggggag aaaggcggac aggtatccgg taagcggcag ggtcggaaaca 15567
 ggagagcgca cgagggagct tccaggggg aacgcctggg atctttatag tcctgtcggg 15627
 tttcgccacc tctgacttga gcgtcgattt ttgtgatgct cgtcaggggg gcggagccta 15687
 tggaaaaacg ccagcaacgc ggcctttta cggttcctgg cctttgctg gcctttgct 15747
 cacatgttct ttccctgcgtt atccccgtat tctgtggata accgtattac cgcctttgag 15807
 ttagctgata ccgctcgccg cagccgaacg accgagcgca gcgagtcagt gagcgaggaa 15867
 gcggaagagc gccagaaggc cgccagagag gccgagcgcg gccgtgaggc ttggacgcta 15927
 gggcagggca tgaaaaagcc ctagcgggc tgctacgggc gtctgacgcg gtggaaaggg 15987
 ggagggatg ttgtctacat ggctctgctg tagtgagtgg gttgcgctcc ggcagcggtc 16047
 ctgatcaatc gtcaccctt ctcggcctt caacgttccct gacaacgagc ctcctttcg 16107
 ccaatccatc gacaatcacc gcgagtcct gctcgaacgc tgcgtccggc cccgcttcgt 16167
 cgaaggcgtc tatcgccggc cgcaacagcg gcgagagcgg agcctgttca acggtgccgc 16227
 cgcgctcgcc ggcatcgctg tcgcccgcct gtcctcaag cacggccca acagtgaagt 16287
 agctgattgt catcagcgca ttgacggcgt cccccggcga aaaacccggc tgcagagga 16347
 agcgaagctg cgcgtcgcc gttccatct gcgggtcgcc cggtcgcgtg cccgcatgga 16407
 tgcgcgcgatc atcgcgttag gcgagcagcg cctgcctgaa gctgcgggca ttcccgatca 16467
 gaaatgagcg ccagtcgtcg tcggctctcg gcaccgaatg cgtatgattc tccgccagca 16527
 tggcttcggc cagtgcgtcg agcagcgccc gcttggcctt gaaatgcccag taaagcgccg 16587
 gctgctgaac ccccaaccgt tccgcccagt tgcgtgtcgt cagaccgtct acgcccac 16647
 cgttcaacag gtccagggcg gcacggatca ctgtattcgg ctgcaactt gtcatgctt 16707
 acactttatc actgataaaac ataatatgtc caccaactta tcagtgataa agaatcccg 16767
 cgttcaatcg gaccagcgga ggctggtccg gaggccagac gtgaaaccca acataccct 16827
 gatcgtaatt ctgagcaactg tcgcgtcgat cgtgtcgcc atcggcctga ttatgcccgt 16887
 gctgcccggc ctcctgcgcg atctggttca ctcgaacgc gtcaccgccc actatggcat 16947
 tctgctggcg ctgtatgcgt tggtgcaatt tgcctgcgcg cctgtgctgg gcgcgcgtc 17007
 ggatcgtttc gggcgccggc caatcttgct cgtctcgctg gccggcgcca gatc 17061

<210> 35
 <211> 290
 <212> PRT
 <213> *Phaeodactylum tricornutum*, *Physcomitrella patens*, *Caenorhabditis elegans*
 <400> 35

Met Glu Val Val Glu Arg Phe Tyr Gly Glu Leu Asp Gly Lys Val Ser
 1 5 10 15

Gln Gly Val Asn Ala Leu Leu Gly Ser Phe Gly Val Glu Leu Thr Asp
 20 25 30

Thr Pro Thr Thr Lys Gly Leu Pro Leu Val Asp Ser Pro Thr Pro Ile
 35 40 45

Val Leu Gly Val Ser Val Tyr Leu Thr Ile Val Ile Gly Gly Leu Leu
 50 55 60

Trp Ile Lys Ala Arg Asp Leu Lys Pro Arg Ala Ser Glu Pro Phe Leu
 65 70 75 80

Leu Gln Ala Leu Val Leu Val His Asn Leu Phe Cys Phe Ala Leu Ser
 85 90 95

Leu Tyr Met Cys Val Gly Ile Ala Tyr Gln Ala Ile Thr Trp Arg Tyr
 100 105 110

Ser Leu Trp Gly Asn Ala Tyr Asn Pro Lys His Lys Glu Met Ala Ile
 115 120 125

Leu Val Tyr Leu Phe Tyr Met Ser Lys Tyr Val Glu Phe Met Asp Thr
 130 135 140

Val Ile Met Ile Leu Lys Arg Ser Thr Arg Gln Ile Ser Phe Leu His
 145 150 155 160

Val Tyr His His Ser Ser Ile Ser Leu Ile Trp Trp Ala Ile Ala His
 165 170 175

His Ala Pro Gly Gly Glu Ala Tyr Trp Ser Ala Ala Leu Asn Ser Gly
 180 185 190

Val His Val Leu Met Tyr Ala Tyr Tyr Phe Leu Ala Ala Cys Leu Arg
 195 200 205

Ser Ser Pro Lys Leu Lys Asn Lys Tyr Leu Phe Trp Gly Arg Tyr Leu
 210 215 220

Thr Gln Phe Gln Met Phe Gln Phe Met Leu Asn Leu Val Gln Ala Tyr
 225 230 235 240

Tyr Asp Met Lys Thr Asn Ala Pro Tyr Pro Gln Trp Leu Ile Lys Ile
 245 250 255

Leu Phe Tyr Tyr Met Ile Ser Leu Leu Phe Leu Phe Gly Asn Phe Tyr
 260 265 270

Val Gln Lys Tyr Ile Lys Pro Ser Asp Gly Lys Gln Lys Gly Ala Lys
 275 280 285

Thr Glu
 290

<210> 36
 <211> 282
 <212> PRT
 <213> *Phaeodactylum tricornutum*, *Physcomitrella patens*, *Caenorhabditis elegans*
 <400> 36

Met Glu Asn Phe Trp Ser Ile Val Val Phe Phe Leu Leu Ser Ile Leu
 1 5 10 15

Phe Ile Leu Tyr Asn Ile Ser Thr Val Cys His Tyr Tyr Met Arg Ile
 20 25 30

Ser Phe Tyr Tyr Phe Thr Ile Leu Leu His Gly Met Glu Val Cys Val
 35 40 45

Thr Met Ile Pro Ser Trp Leu Asn Gly Lys Gly Ala Asp Tyr Val Phe
 50 55 60

His Ser Phe Phe Tyr Trp Cys Lys Trp Thr Gly Val His Thr Thr Val
 65 70 75 80

Tyr Gly Tyr Glu Lys Thr Gln Val Glu Gly Pro Ala Val Val Ile Cys
 85 90 95

Asn His Gln Ser Ser Leu Asp Ile Leu Ser Met Ala Ser Ile Trp Pro
 100 105 110

Lys Asn Cys Val Val Met Met Lys Arg Ile Leu Ala Tyr Val Pro Phe
 115 120 125

Phe Asn Leu Gly Ala Tyr Phe Ser Asn Thr Ile Phe Ile Asp Arg Tyr
 130 135 140

Asn Arg Glu Arg Ala Met Ala Ser Val Asp Tyr Cys Ala Ser Glu Met
 145 150 155 160

Lys Asn Arg Asn Leu Lys Leu Trp Val Phe Pro Glu Gly Thr Arg Asn
 165 170 175

Arg Glu Gly Gly Phe Ile Pro Phe Lys Lys Gly Ala Phe Asn Ile Ala
 180 185 190

Val Arg Ala Gln Ile Pro Ile Ile Pro Val Val Phe Ser Asp Tyr Arg
 195 200 205

Asp Phe Tyr Ser Lys Pro Gly Arg Tyr Phe Lys Asn Asp Gly Glu Val
 210 215 220 240

Val Ile Arg Val Leu Asp Ala Ile Pro Thr Lys Gly Leu Thr Leu Asp
 225 230 235 240

Asp Val Ser Glu Leu Ser Asp Met Cys Arg Asp Val Met Leu Ala Ala
 245 250 255

Tyr Lys Glu Val Thr Leu Glu Ala Gln Gln Arg Asn Ala Thr Arg Arg
 260 265 270

Gly Glu Thr Lys Asp Gly Lys Lys Ser Glu
 275 280

<210> 37
 <211> 477
 <212> PRT
 <213> *Phaeodactylum tricornutum*, *Physcomitrella patens*, *Caenorhabditis elegans*
 <400> 37

Met Gly Lys Gly Gly Asp Ala Arg Ala Ser Lys Gly Ser Thr Ala Ala

1	5	10	15
---	---	----	----

Arg	Lys	Ile	Ser	Trp	Gln	Glu	Val	Lys	Thr	His	Ala	Ser	Pro	Glu	Asp
20								25						30	

Ala	Trp	Ile	Ile	His	Ser	Asn	Lys	Val	Tyr	Asp	Val	Ser	Asn	Trp	His
35								40				45			

Glu	His	Pro	Gly	Gly	Ala	Val	Ile	Phe	Thr	His	Ala	Gly	Asp	Asp	Met
50								55				60			

Thr	Asp	Ile	Phe	Ala	Ala	Phe	His	Ala	Pro	Gly	Ser	Gln	Ser	Leu	Met
65								70				75		80	

Lys	Lys	Phe	Tyr	Ile	Gly	Glu	Leu	Leu	Pro	Glu	Thr	Thr	Gly	Lys	Glu
85								90					95		

Pro	Gln	Gln	Ile	Ala	Phe	Glu	Lys	Gly	Tyr	Arg	Asp	Leu	Arg	Ser	Lys
100								105				110			

Leu	Ile	Met	Met	Gly	Met	Phe	Lys	Ser	Asn	Lys	Trp	Phe	Tyr	Val	Tyr
115								120				125			

Lys	Cys	Leu	Ser	Asn	Met	Ala	Ile	Trp	Ala	Ala	Ala	Cys	Ala	Leu	Val
130								135				140			

Phe	Tyr	Ser	Asp	Arg	Phe	Trp	Val	His	Leu	Ala	Ser	Ala	Val	Met	Leu
145								150				155		160	

Gly	Thr	Phe	Phe	Gln	Gln	Ser	Gly	Trp	Leu	Ala	His	Asp	Phe	Leu	His
165								170				175			

His	Gln	Val	Phe	Thr	Lys	Arg	Lys	His	Gly	Asp	Leu	Gly	Gly	Leu	Phe
180								185				190			

Trp	Gly	Asn	Leu	Met	Gln	Gly	Tyr	Ser	Val	Gln	Trp	Trp	Lys	Asn	Lys
195								200				205			

His	Asn	Gly	His	His	Ala	Val	Pro	Asn	Leu	His	Cys	Ser	Ser	Ala	Val
210								215				220			

Ala Gln Asp Gly Asp Pro Asp Ile Asp Thr Met Pro Leu Leu Ala Trp

225

230

235

240

Ser Val Gln Gln Ala Gln Ser Tyr Arg Glu Leu Gln Ala Asp Gly Lys
 245 250 255

Asp Ser Gly Leu Val Lys Phe Met Ile Arg Asn Gln Ser Tyr Phe Tyr
 260 265 270

Phe Pro Ile Leu Leu Ala Arg Leu Ser Trp Leu Asn Glu Ser Phe
 275 280 285

Lys Cys Ala Phe Gly Leu Gly Ala Ala Ser Glu Asn Ala Ala Leu Glu
 290 295 300

Leu Lys Ala Lys Gly Leu Gln Tyr Pro Leu Leu Glu Lys Ala Gly Ile
 305 310 315 320

Leu Leu His Tyr Ala Trp Met Leu Thr Val Ser Ser Gly Phe Gly Arg
 325 330 335

Phe Ser Phe Ala Tyr Thr Ala Phe Tyr Phe Leu Thr Ala Thr Ala Ser
 340 345 350

Cys Gly Phe Leu Leu Ala Ile Val Phe Gly Leu Gly His Asn Gly Met
 355 360 365

Ala Thr Tyr Asn Ala Asp Ala Arg Pro Asp Phe Trp Lys Leu Gln Val
 370 375 380

Thr Thr Thr Arg Asn Val Thr Gly Gly His Gly Phe Pro Gln Ala Phe
 385 390 395 400

Val Asp Trp Phe Cys Gly Gly Leu Gln Tyr Gln Val Asp His His Leu
 405 410 415

Phe Pro Ser Leu Pro Arg His Asn Leu Ala Lys Thr His Ala Leu Val
 420 425 430

Glu Ser Phe Cys Lys Glu Trp Gly Val Gln Tyr His Glu Ala Asp Leu
 435 440 445

Val Asp Gly Thr Met Glu Val Leu His His Leu Gly Ser Val Ala Gly
 450 455 460

Glu Phe Val Val Asp Phe Val Arg Asp Gly Pro Ala Met
 465 470 475

<210> 38
 <211> 47
 <212> DNA
 <213> artificial sequence

<220>
 <221> misc_feature
 <222> (1)..(47)
 <223> synthetic oligonucleotide

<400> 38
 ccggaattcg gcgcgccgag ctcctcgagc aaatttacac attgccca

47

<210> 39
 <211> 47
 <212> DNA
 <213> artificial sequence

<220>
 <221> misc_feature
 <222> (1)..(47)
 <223> synthetic oligonucleotide

<400> 39
 ccggaattcg gcgcgccgag ctcctcgagc aaatttacac attgccca

47

<210> 40
 <211> 47
 <212> DNA
 <213> artificial sequence

<220>
 <221> misc_feature
 <222> (1)..(47)
 <223> synthetic oligonucleotide

<400> 40
 ccggaattcg gcgcgccgag ctcctcgagc aaatttacac attgccca

47

<210> 41
 <211> 48
 <212> DNA
 <213> artificial sequence

<220>
 <221> misc_feature
 <222> (1)..(48)

<223> synthetic oligonucleotide

<400> 41

aaaactgcag gcggccgccc accgcggtgg gctggctatg aagaaatt

48

<210> 42

<211> 27

<212> DNA

<213> artificial sequence

<220>

<221> misc_feature

<222> (1)..(27)

<223> synthetic oligonucleotide

<400> 42

cgcgatccg ctggctatga agaaatt

27

<210> 43

<211> 45

<212> DNA

<213> artificial sequence

<220>

<221> misc_feature

<222> (1)..(45)

<223> synthetic oligonucleotide

<400> 43

tcccccgga tcgatgccgg cagatctgct ggctatgaag aaatt

45

<210> 44

<211> 40

<212> DNA

<213> artificial sequence

<220>

<221> misc_feature

<222> (1)..(40)

<223> synthetic oligonucleotide

<400> 44

aaaactgcag tctagaaggc ctcctgcttt aatgagatat

40

<210> 45

<211> 51

<212> DNA

<213> artificial sequence

<220>

<221> misc_feature

<222> (1)..(51)

<223> synthetic oligonucleotide

<400> 45

cgccggatccg atatcgggcc cgcttagcggtt aaccctgctt taatgagata t

51

<210> 46

<211> 33

<212> DNA

<213> artificial sequence

<220>

<221> misc_feature

<222> (1)...(33)

<223> synthetic oligonucleotide

<400> 46

tccccccgggc catggcctgc tttaatgaga tat

33

<210> 47

<211> 53

<212> DNA

<213> artificial sequence

<220>

<221> misc_feature

<222> (1)...(53)

<223> synthetic oligonucleotide

<400> 47

cccaagcttg gcgcgccgag ctcgaattcg tcgacggaca atcagtaaat tga

53

<210> 48

<211> 53

<212> DNA

<213> artificial sequence

<220>

<221> misc_feature

<222> (1)...(53)

<223> synthetic oligonucleotide

<400> 48

cccaagcttg gcgcgccgag ctcgaattcg tcgacggaca atcagtaaat tga

53

<210> 49

<211> 47

<212> DNA

<213> artificial sequence

<220>

<221> misc_feature

<222> (1)...(47)

<223> synthetic oligonucleotide

<400> 49	
cccaagcttg gcgccgag ctcgtcgacg gacaatcagt aaattga	47
<210> 50	
<211> 29	
<212> DNA	
<213> artificial sequence	
<220>	
<221> misc_feature	
<222> (1)..(29)	
<223> synthetic oligonucleotide	
<400> 50	
acataatgga gaacttctgg tcgatcgac	29
<210> 51	
<211> 24	
<212> DNA	
<213> artificial sequence	
<220>	
<221> misc_feature	
<222> (1)..(24)	
<223> synthetic oligonucleotide	
<400> 51	
ttactcagat ttcttcccgat cttt	24
<210> 52	
<211> 26	
<212> DNA	
<213> artificial sequence	
<220>	
<221> misc_feature	
<222> (1)..(26)	
<223> synthetic oligonucleotide	
<400> 52	
acataatgac cttccttagcc atatta	26
<210> 53	
<211> 24	
<212> DNA	
<213> artificial sequence	
<220>	
<221> misc_feature	
<222> (1)..(24)	
<223> synthetic oligonucleotide	

<400> 53	24
tcagatattc aaattggcgg cttc	
<210> 54	
<211> 32	
<212> DNA	
<213> artificial sequence	
<220>	
<221> misc_feature	
<222> (1)..(32)	
<223> synthetic oligonucleotide	
<400> 54	32
ttaagcgcgg ccgcattggag aacttctggt cg	
<210> 55	
<211> 31	
<212> DNA	
<213> artificial sequence	
<220>	
<221> misc_feature	
<222> (1)..(31)	
<223> synthetic oligonucleotide	
<400> 55	31
acctcggcgg ccgcctttt actcagattt c	
<210> 56	
<211> 41	
<212> DNA	
<213> artificial sequence	
<220>	
<221> misc_feature	
<222> (1)..(41)	
<223> synthetic oligonucleotide	
<400> 56	41
acataatgga gaacttctgg tctattgttg tgtttttct a	
<210> 57	
<211> 41	
<212> DNA	
<213> artificial sequence	
<220>	
<221> misc_feature	
<222> (1)..(41)	
<223> synthetic oligonucleotide	
<400> 57	

ctagcttagct tactcagatt tcttcccgtc ttttgtttct c